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ASTRONOMICAL

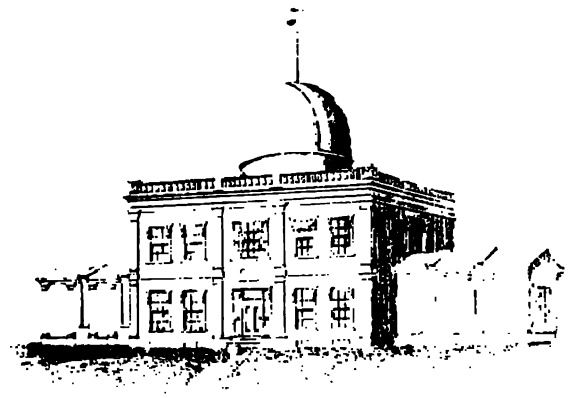
OBSERVATIONS

MADE UNDER THE DIRECTION OF M. F. MAURY, LIEUT. U. S. NAVY,
DURING THE YEAR 1847,

AT THE

NATIONAL OBSERVATORY,

WASHINGTON.



VOL. III.

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WASHINGTON:
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1849.

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CHIEF OF BUREAU OF ORDNANCE AND HYDROGRAPHY.

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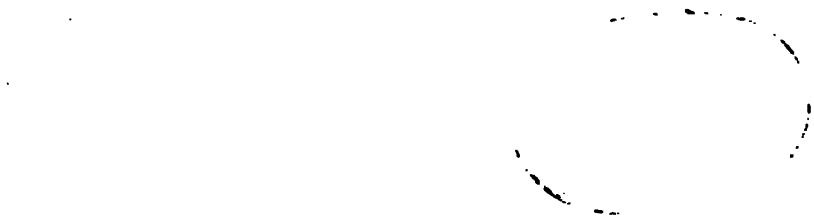

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INTRODUCTION

TO THE

ASTRONOMICAL OBSERVATIONS.

The Observatory is situated in Washington, on the left bank of the Potomac, 94 feet above the level of half tide. By the city measurement it is 18″.7 north and 10ˢ.26 west from the Capitol of the United States.

Its Latitude, as derived from observations in 1845—6, is 38° 53′ 39″.25 north[a]. A discussion of later observations indicates that no correction greater than 0″.25 is to be apprehended.

The Longitude of the Observatory, assumed in 1845, as the best determination known at the time, was 5ʰ 8ᵐ 14ˢ.64 west from Greenwich. This has been used, so far as it has been required, in the reduction of observations and in the computation of the tabulated places of the sun, moon and planets, for this and the preceding years.

The discussions by Lieutenant J. M. Gilliss, U. S. Navy,[b] of moon culminations observed by him at the Naval Observatory on Capitol Hill, and those conducted under the superintendency of the United States Coast Survey,[c] of all the available observations made in the United States, indicate that this assumed longitude is too great by 3ˢ or 4ˢ.

To avoid, however, frequent changes, it is thought best still to retain this assumed value, until a final satisfactory determination shall have been made.

The meridian-line of the Observatory towards the south crosses the Potomac river twice before reaching an elevation suitable for a meridian mark. Towards the north it crosses the deep gorge of Rock Creek, also quite obliquely, and a short distance beyond passes the heights of Georgetown, which are for the most part covered with forest trees.

Owing to these circumstances, viz. the Potomac on the south, Rock Creek and the tree-covered heights of Georgetown on the north, and the consequent liability of the line of vision, thus passing over water and

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[a] Wash. Ast. Ob. Vol. I, App. p. 116.

[b] Proc: Am. Phil. Soc., April 20, 1849.

[c] Ast. Journal, Vol. III, p. 23.

land, to lateral refraction, a suitable place for distant meridian marks for the instruments cannot be obtained.

With the advantages and powers of the collimating eye-piece for determining the corrections of level and collimation, I have judged it better to depend, for the present, upon actual observations for the correction of azimuth, than to trust to such distant meridian marks as might be erected.

The grounds of the Observatory cover 17 acres; they are enclosed on the east, south and west sides by a brick wall, and on the north side by a picket fence. During this year they have continued in a rough, unfinished state, requiring heavy excavation and embankments.

The Observatory is a brick building, fifty feet square, surmounted by a dome, and having wings to the south, the east, and the west. In these wings and dome the instruments are situated, leaving the main building for offices. It has four rooms on each floor, which were occupied during this year, one as a library and office for the Superintendent; two for the charts and chronometers, which are required for the naval service; one as a drafting room for the construction of charts; two as computing rooms; two as office rooms for the Lieutenants and Passed Midshipmen, in which the various duties required of them are performed. Of the four basement rooms, one of them is occupied as a work-shop by the machinist of the Observatory, (in 1847 Mr. Brown,) another by the watchman, and two others as coal rooms and hot air chambers for warming the building in the winter.

The dome is 23 feet in diameter, with an elevation of 18 feet from the floor. It contains the Equatorial Instrument.

In the South wing, which is 40 by 21 feet outside, and divided into two apartments, are the Prime Vertical Transit Instrument and a Transit Circle, which was received during the year, and also mounted in the Prime Vertical. The circles of this latter instrument, however, were found damaged by its transportation, and returned to the makers.

The West wing, 26 by 21 feet, contains the Meridian Transit Instrument.

The East wing, also 26 by 21 feet, contains the Mural Circle and the Meridian Circle.

In each of these wings is a clock, regulated to sidereal time. A clock, regulated to mean time, is placed in the chronometer room, with which the chronometers for the naval service are daily compared.

During this year the dwelling of the Superintendent immediately east of the Observatory was completed. In 1848 the East wing was extended 24 feet to connect with it, thus furnishing a convenient room for the chronometers.

Under the dwelling of the Superintendent is the furnace for warming the Observatory. This is done by conducting hot water in large iron pipes, laid underground from the basement of the dwelling to the basement of the Observatory, where it heats the air in two chambers constructed for the purpose. The plan is beautiful, the arrangement economical, and the heat very pleasant.

The Observatory is a part of the establishment of the Bureau of Ordnance and Hydrography, under the

Navy Department of the United States. The chief of this bureau in 1847, was Commodore Lewis Warrington.

The Observatory is therefore a Naval institution, and by law the Superintendent of it is required to be an officer of the Navy, not below the grade of Lieutenant.

His assistants, with barely an exception, are also officers of the Navy, selected from the grades of Lieutenant, Professor of Mathematics, and Passed Midshipman.

Besides the duties of the Observatory, the Superintendent is charged, under the Bureau of Ordnance and Hydrography, with the Hydrographical Department of the Government, with the selection, purchase, trial, examination, safe-keeping and distribution of all the chronometers and nautical instruments, books, maps and charts required for the purposes and use of the Navy.

The business correspondence of the office is large, and as no regular clerk was allowed previously to 1848, much of the Superintendent's time has been daily taken up with this.

There are in addition to this upwards of one thousand ships daily engaged in making, in concert with him, and in all parts of the Ocean, observations upon the winds and currents of the sea, upon the barometer, the air and water thermometer, and other phenomena calculated to facilitate or improve navigation, or to advance our knowledge concerning the laws or the facts connected with the general system of the aqueous and atmospherical circulation of the globe.

These observations are discussed in the most elaborate manner, and entirely regardless of all theory, with the view of comparing each one with all the rest, and of eliciting from them all the facts which they contain with regard to the general circulation of the sea and the air, with regard to thunder, lightning, rains, fogs, storms and calms, to currents, climates, temperatures of air and water, and to the discovery both of dangers and facilities to navigation, and to the migration and habits of the whale.

A large corps, principally consisting of Lieutenants and Passed Midshipmen, is engaged upon the details of these investigations. They are liable to be called away to sea, and often are at a moment's warning, and that so frequently, that almost the entire corps is sometimes ordered off to sea, and a new one sent in its place, so as to form, in the course of a few weeks, a complete change of the officers engaged upon these investigations. Owing to this liability, and to the fact that there is no permanent assistant in the Hydrographical Department, the Superintendent is compelled to charge himself with a close and personal examination of many of the details connected with these investigations.

When the exigencies of the public service are such as to allow a full complement of officers, a Lieutenant and Professor of Mathematics are assigned to each of the meridian instruments as observers. In this duty they take turns. As they are not lodged near the Observatory, but live in various parts of the city, they have usually relieved each other at intervals of twenty-four hours. In clear weather the term of duty for one observer continues from sunrise to sunrise.

Not more than one observer has been employed at a time with the Equatorial and Prime Vertical Transit Instrument. When one only is thus employed he is not required to observe later than 2 A. M.

With regard however to the time to be devoted to observations, much has been left to the discretion of the observers, both as to the suitableness of the atmosphere and the number of observations which could be conveniently reduced. The great accumulation of observations beyond the means and force for reducing promptly, is deeply to be regretted.

The office hours at the Observatory are from 9 A. M. to 3 P. M. Observers who have been up late the previous night are not expected to be present until noon.

It sometimes has become necessary to impose upon them other labor, than that which directly belongs to them. In every instance, and on all occasions, the calls for extra work have been cheerfully responded to by the observers, as well as by all in every other part of the establishment.

The permanent adjustments of the instruments are not disturbed, unless by the Superintendent, or by his especial leave.

The Meridian Instruments have been employed in observations of the sun, moon, planets, fundamental stars, and of comparison-stars, whose places were desired for the Equatorial observations. They have also been regularly engaged in making observations for the Washington Catalogue.

The observations with the Prime Vertical Transit Instrument have been chiefly of small stars near the Zenith.

Those with the Equatorial have been on Neptune and the other newly discovered planets.

The observers with the Transit Instrument were Professors Beecher and Keith;

with the Mural Circle, Lieut. T. J. Page, Prof. Coffin, and, in the latter part of the year, Lieut. Steedman;

with the Meridian Circle, Lieut. Muse, Prof. Major, and, at the commencement of the year, Lieut. Maynard and Prof. Hubbard;

with the Prime Vertical Transit Instrument, Lieut. Herndon and Prof. Pettigrew;

with the Equatorial, Lieut. Maury and Prof. Hubbard.

The initials of the observers are given in connection with their observations. Each observer has furnished to a considerable extent the reduction of his own observations.

The reductions have been completed and revised, and the work prepared for the press by—

Professors Keith and Beecher for the Transit Instrument;

Professors Coffin and Benedict for the Mural Circle;

Professors Major and Hubbard, for the Meridian Circle;

Professor Hubbard, for the Prime Vertical Transit Instrument,

and by Mr. James Ferguson, for the Equatorial.

They have had the assistance of other officers of the Institution, who from time to time could be detailed for the purpose. Among them may be mentioned Lieutenants Worden and Kennard, Professor Yarnall, Passed Midshipmen Warley, Jackson, and Harrison.

The introductory remarks have been prepared by Professors Keith, Coffin, Hubbard, and Ferguson, each for the work of the instrument with which he was especially connected.

The appendix contains an interesting series of observations on the solar spots by Professor Sestini, of Georgetown College; observations on the Mississippi river at Memphis, Tennessee, by Passed Midshipman Marr, U. S. N.; and a series of tables for facilitating the reductions of the apparent places of the fixed stars to their mean places, together with a general table for the computation of annual precessions, prepared by Professors Coffin and Hubbard.

THE WEST TRANSIT INSTRUMENT.

This instrument has been minutely described in the introduction to the volume of observations for 1845.

The telescope has a clear aperture of 5.3 inches, and a focal length of 7 feet 1 inch. It is mounted upon large piers of granite which rest firmly on a foundation of stone, extending ten feet below the surface of the ground.

The observers during the year 1847, were Professor Mark H. Beecher and Professor R. Keith. For the determination of their personal equation the same star was observed by them alternately, over alternate wires at the same culmination. The mean of twenty-four observations gave the time by Professor Keith, $0^s.36$ later than that by Professor Beecher. Putting K for Keith's time of transit, and B for Beecher's

$$K = B + 0^s.36 \pm 0^s.012$$

In obtaining the rate of the clock, and in correcting the observations of one observer for the clock-error determined from the observations of the other, this quantity has been used.

The observations with this instrument occupy pages 1 to 33, inclusive, of the present volume.

The first column of each page contains the date, the day beginning with the transit of the sun.

The second contains the numbers for reference.

The third contains the name of the object observed. For stars, preference has been given, in order, to the name given in the Nautical Almanac, the Greek letter of the Catalogue of the British Association, the number of that catalogue with the name of the Constellation, the hour and number of Weisse's Catalogue, the number of other catalogues. Stars not found in any catalogue are designated by the declination alone.

The fourth to the tenth column, inclusive, contains the seconds for the time of transit over each wire as noted by the observer.

The eleventh contains the mean of the preceding times of transit over the wires observed.

The twelfth to the fourteenth column, inclusive, contains the reduction to the meridian, the reduction of the limb of a body to its centre, and the correction of the clock.

The reduction of an observation to the meridian involves three steps—first, the reduction of the mean of the wires observed to the mean of the seven; second, the reduction of the mean of the seven to the plane in which the instrument revolves; third, the reduction of this plane to the plane of the meridian.

Calling the first and second of these reductions taken in parts of a great circle, C and c; and the third, also

taken in parts of a great circle, m when the instrument points to the equator, and n when it points to the pole; and putting S for their correction in time at any declination δ, we shall have

$$S = C \sec \delta + c \sec \delta + n \tan \delta + m.$$

The reductions of each wire to the mean of the seven, determined by 35 observations of Polaris and δ Ursæ Minoris, are as follows:

A	+ 37.66
B	24.97
C	+ 12.37
D	— 0.16
E	12.58
F	24.72
G	— 37.54

the wires being lettered in order from the side next to the clamp of the axis.

C sec δ has been corrected by means of the following table for stars near the pole, (arc — sin) being taken out for each wire observed, and the sum, divided by the number of wires, added to C sec δ.

H. Angle.	(Arc–Sin.)	H. Angle.	(Arc–Sin.)	H. Angle.	(Arc–Sin.)
m	s.	m	s.	m	s.
3	0.00	12	0.33	21	1.76
4	.01	13	.42	22	2.03
5	.02	14	.52	23	2.32
6	.04	15	.64	24	2.63
7	.07	16	.78	25	2.97
8	.10	17	0.94	26	3.34
9	.14	18	1.12	27	3.34
10	.19	19	1.31	28	4.17
11	0.25	20	1.52	29	4.64

C was frequently determined with the collimating eye-piece. Putting 2Δ and $2\Delta'$ for the distance of the middle wire west of its image when the clamp is east and west respectively, $2p$ for the excess of the clamp pivot, r for the reduction of the mean of the seven wires to the middle wire, and a for the correction for diurnal aberration in latitude ϕ (for this Observatory $a = -0^s.016$.)

$$C = \tfrac{1}{2}(\Delta - \Delta') - p + r + a \qquad \text{for clamp east.}$$
$$C = -\tfrac{1}{2}(\Delta - \Delta') + p - r + a \qquad \text{for clamp west.}$$

If b represent the depression of the eastern end of the axis,

$$b = -\tfrac{1}{2}(\Delta + \Delta') - p \qquad \text{for clamp east.}$$
$$b = -\tfrac{1}{2}(\Delta + \Delta') + p \qquad \text{for clamp west.}$$

In measuring the quantities 2Δ and $2\Delta'$, the micrometer wire, which moves north and south, was separated from a fixed wire until the space enclosed between them was judged to be equal to the interval between the middle wire and its image, and this space measured with the micrometer.

The quantities n and m were determined from the observations, as often as they furnished the data, by means of the formulæ;

$$n = \frac{(\alpha - \tau) - (\alpha' - \tau') - c\,(\sec\delta - \sec\delta')}{\tan\delta - \tan\delta'}$$

$$m = b \sec\phi - n \tan\phi$$

in which α, τ and δ are respectively the right ascension, time of transit and declination of any star and α', τ' and δ' those of another star differing as much as possible in declination, and but little in time.

The semi-diameters were interpolated from those given in the Nautical Almanac.

The correction of the clock has been determined on each day from all the Nautical Almanac stars observed south of 40° north declination, and a mean of the determinations adopted for the correction at a mean of the times of transit. The rate of the clock was so irregular as to render observations corrected for an error obtained by applying the rate for any length of time, very uncertain.

The fifteenth column contains the reduced right ascensions.

The sixteenth contains the reduction of stars to their mean places for the beginning of 1850. For the Nautical Almanac stars, these reductions have been obtained by correcting those used in the Nautical Almanac for the difference between the constants then used, and those given in later years of the ephemeris. For stars found in the catalogue of the British Association; the reductions have been completed with the logarithms of a, b, c, d, of that catalogue, and the logarithms A. B. (corrected by adding 0.0013 to each,) C. and D. of the Almanac.

The reductions for other stars have been computed with the independent constants of Bessel.

On pages 251 to 260 have been collected the mean places of each star observed. Those rejected in taking the mean are enclosed in brackets.

On pages 285 to 290 are given the comparisons of the observations of the sun, moon, and planets, with their tabular places interpolated for the longitude of the Observatory with 2d and 3d differences from the Nautical Almanac.

THE MURAL CIRCLE.

The Mural Circle is mounted in the east wing of the Observatory upon the eastern face of the sand stone pier, to which it was removed in the latter part of 1845.

The Circle is a single casting of brass, five feet in diameter. The divisions are cut 5′ apart, in a band of gold, which is inserted in the rim. They are read by means of six of Troughton's reading microscopes, which are mounted firmly upon the face of the pier and adjusted, as nearly as practicable, 60° from each other. These microscopes are designated in the observations by the letters A, B, C, D, E, F. They are adjusted as to focal length, so that five revolutions of the micrometer-screw of each will measure one space, or 5′ of the circle. The micrometer heads are divided into sixty parts. In reading the circle, the seconds and parts are taken from each of the six microscopes, the degrees and minutes from A alone; which is mounted on the north side of the pier, and in the horizontal line which passes through the center of the circle. The other microscopes are so arranged, that

	B	C	D	E	F	
the readings for						
= the readings for A +	180°,	+ 300°,	+ 120°,	+ 240°,	+ 60°,	respectively.

The divisions are illuminated by a lamp placed behind the pier in a line with the axis of the instrument; the light from this lamp passes through six holes, drilled through the pier, directly to the reflectors attached to the several microscopes. A less variable illumination is thus secured, than by means of lamps carried in the hands. It is important to have the same illumination of the divisions in the observation of a star, and in the determination of the nadir-point employed in its reduction.

The circle is adjusted to a vertical position by means of a plummet suspended by a fine silver wire, with the aid of appendages attached to the telescopes, known as Ramsden's Ghosts; and to its position in the meridian by observations of transits of circumpolar stars.

The telescope has an object-glass of four inches clear aperture, with a focal length of five feet. It is attached to an independent axis, moving within the axis of the circle, and may be moved to any position with reference to the graduations. The ends of the tube, or the cells supporting the object-glass and the micrometer, are firmly clamped to the rim of the circle. During this year the position of the telescope has been such, that when directed to the Zenith, the circle reading has been nearly 0° 0′ 0″.

The eye-end of the telescope is furnished with a fixed diaphragm, containing seven vertical wires, de-

signated, I, II, III, &c., nearly equidistant, and at an average interval apart of 15ˢ.4 (of time,) and one horizontal wire designated as the fixed-wire. The adjustments of this diaphragm consist in placing it in the principal focus of the object-glass; turning it so that an equatorial star will exactly run along the fixed-wire; and, the circle having been adjusted to an exact vertical position and the telescope directed to the nadir, moving the diaphragm so that vertical wire IV will coincide with its image reflected from a surface of mercury and seen by means of the collimating eye-piece.

In connection with the fixed diaphragm is another, moveable by a micrometer screw, and furnished with five wires nearly parallel and placed respectively five, fifteen, fifteen, five revolutions of the micrometer apart. In the record of the work in which they are employed, they are numbered **1**, **2**, **3**, **4**, **5**, in the order of the micrometer scale, i. e, commencing in the southern part of the field of view. The adjustment of this diaphragm, consists in making wire **3** parallel to the horizontal fixed-wire.

The head of the telescope micrometer is divided into one hundred parts. It is adjusted so that when wire **3** is moved into coincidence with the fixed-wire, the micrometer reading shall be 30ʳ.000; 30ʳ indicating the notch of the micrometer scale, which is intersected by the fixed-wire. In reading the micrometer, that notch of the scale is noted, which the wire used in the observation has passed.

On April 14, in attempting to remove from the wires the fibres and shreds which had become attached to them, vertical wire IV was disturbed from its proper position, and the fixed horizontal wire split into several portions, some of which were removed. It remained however divided into two parts, the separation extending sometimes as far as vertical wire IV. New wires were put in on December 4. At the same time the object-glass was taken out and cleaned.

Observations.

The greater part of the ordinary observations with this Instrument have been made with the fixed-wire; the circle being moved by means of a clamp and tangent screw until the fixed-wire exactly bisects the star, or is in contact with a limb of the sun, moon, or planet.

In some of the observations, one or more bisections or contacts are made with one of the micrometer wires, the circle remaining in a fixed position.

In some observations of Polaris and the moon, an observation is first made with the fixed-wire, and the circle remaining unmoved, bisections or contacts are repeated with one of the micrometer wires.

In observing both limbs of a planet, it has been customary to bring the fixed-wire into contact with one limb, and a micrometer wire into contact with the other.

The Instrument is furnished with screens to protect it in observations of the sun.

In all observations care has been taken to note either the time of each bisection or contact, or the position of the star with reference to the vertical wires; to note the indications of the barometer and external thermometer (particularly the latter,) and to read the circle immediately after or before observing the object.

In almost all the observations a power of 125 has been employed.

Nadir Point.

The determinations of the nadir point have been made, as in the preceding years, by means of the collimating eye-piece. The telescope being directed downwards, the circle is moved by one of the tangent screws, until the fixed-wire, illuminated by means of this eye-piece, coincides with its image reflected from a surface of mercury; then the circle-reading corrected for runs and errors of divisions, constitutes the nadir-point. Each determination consists of several such coincidences and circle-readings, the wire and its image being brought into coincidence alternately from opposite sides.

Runs of the Microscopes.

The error of runs, or the excess over five revolutions in the measurement of 5′ of the circle by a microscope micrometer, is given in the following table for each of the microscopes and their mean, as determined on each day from several measurements.

These measurements have been made as in the preceding years, either of 5′ or 10′ of the circle, the middle of the space measured being brought under the zero-point of the microscope. When the readings have been in the vicinity of 0°, 60°, &c., corrections derived from Table A (Wash. Ast. Ob'ns., Vol. II, Int. p. xii) have been applied, and double weight given to the results.

The temperatures at which the determinations were made are also stated: and for particular periods the error of runs for the mean of the microscopes have been reduced to a common temperature by means of the formula[a]

$$R' = R + 0''.061\left(t_0 - \frac{t+t'}{2}\right) + 0''.014,(t-t') - 0''.036,(t_0 - \tau)$$

in which R′ is the reduced and R the measured error of runs; t_0 the temperature to which the reduction is made; t, t′ and τ respectively, the readings of the upper, lower and stone thermometers.

The upper and lower thermometers are upon the face of the pier, the one a few inches above, the other below the rim of the circle; the stone thermometer is in the interior of the pier.

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[a]Washington Astronomical Observations, Vol. I, Int. pp. cxxvii, &c.; Vol. II, Int. p. xiii.

Table A.

Rate of Watches.

Date. 1847.		Rate of Watches. A.	B.	C.	D.	E.	F.	Mean R.	Thermometers. Upper	Lower	Sides.	Mean reduced to E.	t_0	No. of Obs.	Observers.
									°	°	°		°		
Jan.	1	— 1.6	— 1.7	— [illegible]	— 1.4	— 1.2	— 1.3	— 1.11	37.6	34.4	31.5	— 0.16	50	11	C.
	5	[illegible]	[illegible]	— [illegible]	[illegible]	1.3	— 1.6	— 1.30	47.3	47.4	48.4	0.20		6	P.
	6	1.0	1.1	— 1.3	1.2	1.2	1.3	1.37	48.7	47.3	47.7	0.31		18	C.
	9	1.6	2.1	— 1.6	1.3	1.3	1.4	1.21	34.6	31.3	35.3	1.05	30	10	
	11	1.7	1.7	1.6	1.6	1.4	1.3	1.32	28.6	30.4	35.1	0.77		14	
	12	2.1	2.1	2.1	1.4	1.6	1.4	1.27	27.1	28.3	31.2	1.02		10	
	13	2.1	1.6	1.7	1.3	1.1	1.2	1.35	27.4	24.6	27.4	0.98		6	
	14	1.6	1.3	1.1	1.1	1.3	1.4	1.22	32.3	36.1	38.3	0.90		8	
	20	2.1	2.3	1.3	1.4	1.4	1.1	1.11	28.3	28.0	30.3	0.96		7	
	23	1.5	1.3	1.1	1.1	1.1	1.7	1.30	33.5	33.1	30.1	1.03		1	P.
Feb.	1	1.5	1.5	1.3	1.7	1.1	1.2	1.75	41.1	36.7	41.5	0.61	40	12	C.
	5	1.6	1.4	1.2	1.2	1.4	1.3	1.24	36.2	36.7	41.5	0.68		2	P.
	6	2.0	1.4	1.3	0.5	1.1	1.1	0.96	36.1	33.7	39.2	0.63		11	C.
	11	1.5	1.5	1.1	1.5	1.9	1.4	1.77	34.6	33.4	45.1	0.96		4	P.
	12	1.9	1.7	1.3	1.5	1.4	1.5	1.43	34.7	35.6	39.5	0.66		8	C.
	23	1.7	1.6	1.3	1.3	1.4	1.1	1.36	36.5	36.1	41.9	0.67		8	
Mar.	2	1.2	1.5	— 0.7	1.1	1.5	1.2	1.61	43.4	41.2	41.8	0.58		2	P.
	5	1.4	1.3	— 1.3	1.2	0.9	1.2	1.29	46.5	43.0	42.0	0.57		3	
	6	1.3	1.3	0.3	1.1	0.3	1.3	1.37	44.9	42.5	41.6	0.51		8	C.
	8	1.1	0.7	0.1	1.0	1.7	1.1	1.25	51.5	50.5	50.9	0.56		3	P.
	10	1.3	1.1	+ 0.4	0.8	1.1	0.5	0.46	49.2	45.7	50.0	0.64		6	C.
	17	1.2	0.7	— 0.1	0.9	0.9	0.5	0.38	42.5	40.0	41.0	0.40		2	
	18	1.0	0.2	0.2	0.6	0.7	0.3	1.30	48.5	45.0	42.5	0.58		2	
	19	1.0	0.7	0.3	1.0	0.5	0.5	0.34	48.2	47.0	45.3	0.60		3	P.
	20	1.1	1.0	+ 0.1	1.1	1.1	0.4	0.28	50.1	48.5	49.3	0.35	50	7	C.
	24	1.1	0.9	0.4	0.8	0.5	0.2	— 1.25	38.8	52.4	52.5	0.34		6	
	25	0.5	0.5	+ 0.6	1.7	0.4	0.3	— 0.15	58.3	56.5	53.0	0.18		2	P.
	31	2.0	1.7	— 0.4	0.4	1.5	0.8	— 1.18	44.3	41.4	50.3	0.46		9	C.
April	2	0.6	0.8	+ 0.4	1.0	0.1	0.4	— 0.06	50.3	52.3	43.0	0.12		4	P.
	3	0.6	0.6	0.7	1.3	0.3	0.1	+ 0.17	57.1	53.3	50.4	— 0.18		10	C.
	7	0.0	0.3	1.0	1.5	0.0	0.2	0.33	62.5	57.5	55.0	+ 0.21	60	1	P.
	8	— 0.3	0.5	0.8	1.2	0.2	+ 0.4	0.23	64.5	58.4	56.7	+ 0.02		5	C.
	12	+ 0.5	0.3	1.1	1.8	0.4	— 0.5	+ 0.37	63.0	63.5	56.5	0.00		1	P.
	13	— 1.5	1.1	0.4	1.2	— 0.9	0.5	— 0.02	55.5	55.1	52.8	— 0.10		5	C.
	14	0.7	0.7	0.5	1.2	+ 0.7	0.1	+ 0.15	58.7	57.7	59.3	+ 0.23		2	
	16	1.2	1.4	0.7	1.1	— 0.1	— 0.3	— 0.20	55.0	55.0	55.0	— 0.07		1	P.
	20	0.2	0.5	0.4	1.5	— 0.2	+ 0.4	+ 0.23	58.2	56.7	52.0	+ 0.12		3	
	21	0.0	0.4	1.3	1.9	+ 0.3	+ 0.5	0.62	61.2	61.7	55.0	+ 0.21		7	C.
	26	— 0.5	0.8	0.6	1.7	0.2	0.0	0.20	63.0	59.5	57.1	— 0.02		1	P.
	28	+ 0.2	0.8	0.9	1.7	0.4	— 0.2	0.37	65.0	65.2	64.0	+ 0.14		2	
May	4	— 0.3	1.4	0.4	1.1	0.2	— 0.4	— 0.07	60.0	60.0	61.0	— 0.07		1	
	6	— 0.7	0.7	0.9	1.9	0.5	0.0	+ 0.32	65.0	61.0	58.0	+ 0.11		1	
	17	+ 1.0	0.7	0.7	1.6	— 0.1	+ 0.3	0.33	62.9	61.9	62.8	0.28		7	
	20	0.0	0.5	1.4	1.5	+ 0.2	0.1	0.46	67.5	66.8	64.0	0.18		3	
	28	0.5	0.3	1.9	2.7	0.6	1.0	0.90	. .	74.5	69.0	0.12		1	
June	2	0.0	0.7	1.0	2.5	1.0	1.1	0.92	74.0	72.5	70.0	0.63	70	1	
	7	0.7	0.7	2.0	1.8	0.5	1.5	0.96	70.7	70.2	71.0	0.97		2	
	11	0.2	— 0.6	1.6	0.7	0.6	1.4	0.65	75.0	. .	75.0	0.52		1	
	17	1.0	+ 0.1	0.7	2.2	1.0	0.6	0.93	71.0	70.0	70.0	0.91		1	
		0.5	0.3	2.2	4.1	1.2	1.4	1.62	75.5	73.5	70.0	(1.36		1	
		0.7	+ 0.3	1.6	1.5	1.0	+ 0.7	0.97	75.2	74.3	75.0	0.87		2	
		0.8	0.0	+ 2.2	+ 2.0	+ 1.5	0.0	+ 1.08	78.0	77.0	74.0	+ 0.95	77	1	

TABLE A.—Continued.

DATE. 1847.	RUNS OF MICROSCOPES. A.	B.	C.	D.	E.	F.	Mean R.	THERMOMETERS. Upper. t.	Lower. t'	Stone. τ.	MEAN REDUCED. TO R'	t_0	No. of Obs.	Observers.
	"	"	"	"	"	"	"	°	°	°	"	°		
July 6	− 0.5	− 0.1	+ 2.7	+ 2.1	+ 0.5	+ 0.8	+ 0.91	80.5	77.8	74.0	+ 0.70	77	2	P.
12	+ 0.2	0.1	2.3	2.0	0.6	0.8	0.96	77.3	77.7	77.0	0.92		7	
15	0.2	− 0.3	1.2	1.5	0.4	0.6	0.61	73.2	73.7	78.0	0.86		5	
17	0.8	+ 0.8	2.0	1.6	0.4	0.9	1.08	82.5	81.0	76.0	0.77		1	
19	+ 0.7	+ 1.2	2.6	2.2	1.3	1.0	1.47	83.3	82.8	79.0	1.22		3	
Aug. 2	− 0.5	− 0.1	1.5	1.5	0.4	0.7	0.60	72.1	73.3	75.4	0.74		10	C.
5	+ 0.2	− 0.1	2.5	1.8	1.0	0.3	0.96	76.6	73.7	73.3	0.92		8	
10	0.9	+ 1.2	2.0	2.7	0.7	1.3	1.47	78.7	78.2	73.0	1.27		3	P.
11	0.1	0.1	1.8	2.2	0.7	0.5	0.90	76.9	76.9	76.3	0.83	75	12	C.
12	+ 1.0	0.5	2.3	3.5	1.4	1.0	1.62	83.0	79.5	76.0	1.31		1	P.
18	0.0	− 0.7	2.1	2.4	0.4	0.8	0.83	73.5	75.4	79.0	0.99		4	
19	− 0.2	0.4	1.6	1.8	0.7	0.7	0.70	72.2	73.2	75.7	0.85		17	C.
20	0.0	0.6	1.8	2.6	0.4	0.0	0.70	73.5	72.0	72.0	0.77		1	P.
25	0.2	0.4	1.5	1.6	0.5	0.6	0.60	69.5	70.4	72.6	0.82		11	C.
26	− 0.1	0.2	1.7	2.4	0.9	0.4	0.84	69.7	70.3	70.5	0.98		2	P.
27	+ 0.4	+ 0.1	2.4	2.5	1.1	0.7	1.20	76.2	72.5	69.9	1.18		7	C.
30	− 0.1	− 0.1	1.9	1.8	0.6	0.5	0.76	73.1	72.8	73.0	0.82		6	
Sept. 4	+ 0.1	0.0	2.0	2.6	1.2	1.3	1.20	82.8	79.8	78.7	0.98		1	
6	− 0.4	− 0.4	1.6	1.8	0.5	0.6	0.62	70.7	73.8	78.3	0.87		10	
14	0.0	+ 1.0	2.4	2.3	0.2	1.0	1.15	64.5	65.0	66.0	1.08	60	1	P.
16	− 0.8	0.0	2.2	2.0	1.1	1.2	0.95	67.0	. .	63.0	0.70		1	
27	+ 0.5	− 0.4	1.5	1.5	+ 0.2	0.8	0.68	65.3	65.0	65.9	0.58		6	C.
28	− 0.3	0.4	1.9	2.4	− 0.1	0.8	0.71	63.0	63.5	66.5	0.73		2	P.
29	− 0.6	0.6	1.9	1.7	+ 0.5	0.5	0.57	65.5	64.3	65.7	0.49		13	C.
Oct. 1	+ 0.2	0.8	2.2	2.7	+ 1.0	0.9	1.03	69.7	67.0	64.0	0.67		3	P.
4	0.3	0.3	2.2	2.1	− 0.1	0.9	0.83	62.3	61.3	60.3	0.73		5	P&S
5	+ 0.4	0.2	1.5	1.2	+ 1.0	0.5	0.73	62.5	63.5	59.2	0.51		1	C.
8	− 0.5	0.5	1.9	1.3	0.2	0.6	0.52	61.8	61.8	63.8	0.55		8	
9	− 0.2	− 0.7	2.1	1.4	0.4	0.8	0.63	61.0	61.8	63.0	0.65		5	P.
9	+ 0.4	+ 0.5	1.7	1.3	1.0	0.7	0.93	60.8	62.0	63.0	0.96		5	S.
11	− 0.8	− 0.9	1.7	1.5	+ 0.6	0.5	+ 0.44	52.1	56.2	62.8	0.85		3	C.
15	1.2	1.4	0.8	0.8	− 0.4	0.0	− 0.23	43.7	45.9	52.8	0.28	55	7	
16	− 0.4	0.6	2.1	2.2	+ 0.2	0.6	+ 0.68	53.7	53.0	50.5	0.51		4	P.
18	0.0	− 0.4	1.9	1.7	0.2	1.0	0.74	59.1	55.7	53.6	0.49		12	C.
19	+ 0.5	+ 0.2	1.8	3.0	0.8	0.2	1.09	61.5	58.0	56.0	0.88		2	P.
21	− 0.6	− 0.2	1.4	1.8	0.2	0.6	0.53	56.6	56.2	57.3	0.53		11	C.
22	0.2	0.3	0.6	2.6	1.6	0.1	0.73	61.2	61.8	57.0	0.41		2	S.
26	1.1	1.2	1.5	1.3	+ 0.1	0.0	+ 0.10	49.5	51.5	57.3	0.46		5	P.
27	1.5	1.0	1.1	1.6	− 0.3	0.0	− 0.02	44.3	45.1	49.7	0.41		7	C.
28	− 1.0	1.1	1.5	1.4	+ 0.3	0.6	+ 0.29	46.2	46.5	46.5	0.51		2	P.
Nov. 2	+ 0.3	0.8	1.0	1.9	1.2	1.1	0.78	61.3	58.2	54.7	0.52		4	P&S
3	+ 0.1	0.0	0.4	1.9	0.4	1.7	0.75	61.5	58.8	57.0	0.54		1	C.
5	− 0.6	1.3	0.5	2.0	+ 0.2	0.1	0.15	52.7	53.5	61.0	0.47		5	P&S
6	0.4	0.7	1.3	1.5	0.0	0.5	0.37	54.4	53.2	57.5	0.55		7	C.
8	0.1	0.4	1.5	1.7	− 0.1	0.8	0.56	58.2	56.3	54.2	0.42		5	
11	0.7	− 0.7	1.3	1.6	0.1	0.7	0.34	53.6	52.9	59.1	0.60		9	
15	1.1	+ 0.2	1.8	1.3	− 0.1	0.9	0.50	50.6	50.8	53.0	0.69		2	
16	0.2	− 1.0	1.3	2.0	+ 0.3	0.0	0.40	49.7	51.0	. .	. .		1	P.
17	0.1	0.6	1.9	1.3	0.8	0.8	0.68	54.8	54.2	53.0	0.63		6	P&S
18	0.1	0.1	1.8	1.3	+ 0.9	0.4	+ 0.69	59.5	56.3	53.8	0.52		9	C.
20	1.3	0.9	0.6	1.3	− 0.5	0.1	− 0.11	49.0	47.6	54.0	0.28		5	
29	− 0.8	1.8	0.3	0.9	0.1	+ 1.0	− 0.10	34.5	34.5	. .	. .		4	S.
Dec. 3	+ 0.4	1.0	0.7	0.9	− 0.4	− 0.2	+ 0.07	44.4	43.8	44.7	− 0.01	40	1	
6	− 1.1	− 1.6	− 0.2	+ 0.7	+ 0.6	− 1.0	− 0.10	41.0	38.7	. .	. .		1	P.

TABLE A.—Continued.

DATE. 1847.	RUNS OF MICROSCOPES. A.	B.	C.	D.	E.	F.	Mean R.	THERMOMETERS. Upper. t.	Lower. t′	Stone. τ.	MEAN REDUCED TO R′	t_0	No of Obs.	Observers.
	″	″	″	″	″	″	″	°	°	°	″	°		
Dec. 7	− 1.6	− 0.9	+ 0.8	+ 1.6	− 0.5	+ 0.4	− 0.03	40.8	39.2	42.0	+ 0.05	40	5	C.
18	1.3	0.8	0.9	1.5	0.3	+ 0.2	+ 0.04	41.5	41.3	43.3	0.07		12	
21	1.1	1.2	0.0	0.9	0.6	− 0.8	− 0.47	30.0	30.8	. .	. .		5	S.
22	2.3	0.8	0.5	1.1	0.3	+ 0.2	0.27	31.2	33.4	36.2	0.04		5	C.
24	0.9	0.3	0.5	0.8	0.4	0.1	− 0.03	36.7	37.5	. .	. .		3	S.
28	1.3	0.8	0.8	1.5	+ 0.2	0.1	+ 0.09	33.0	33.5	35.9	+ 0.34		5	P.
29	0.9	1.0	0.0	1.2	− 0.7	0.0	− 0.24	39.0	38.2	40.5	− 0.13		5	S.
30	− 0.9	− 0.2	+ 1.3	+ 1.3	− 0.1	+ 0.9	+ 0.39	44.0	40.0	38.7	+ 0.27		4	C.

The following Table contains the mean values of R′ for particular periods.

TABLE B.

Runs of Microscopes—Means for particular periods.

1847.		R′	t_0	No. of Observations.
		″	°	
Jan. 1 to Jan.	7	− 0.24	50	31
8	31	.93	30	56
Feb. 1	Feb. 28	.64	40	45
Mar. 1	Mar. 19	.58	40	25
20	Apr. 4	− .30	50	38
Apr. 5	May 30	+ .12	60	40
June 1	June 30	.82	70	7
July 1	July 31	.92	77	19
Aug. 1	Sept. 10	.88	75	93
Sept. 11	Oct. 12	.57	60	53
Oct. 13	26	.48	55	41
27	Nov. 30	.52	55	62
Dec. 1	Dec. 31	+ 0.13	40	31

The following Table contains under the designation of dR, the differences of the advance from the retrograde measurements, when two spaces or 10′, have been measured. Those derived from readings at 180°0′ have been corrected for errors of graduation by means of Table A, (Wash. Ast. Obs., Vol. II, Int. p. xii.) R_a representing the error of runs from the advance measurement; R_r that from the retrograde, $dR = R_a - R_r$.

TABLE C.

dR.

DATE.	Circle Readings.	A.	B.	C.	D.	E.	F.	Mean.	No. of determinations.
	° ′	″	″	″	″	″	″	″	
1847. Jan. 1, to April 21 .	180 0	+0.05	−0.45	+0.01	−1.42	−1.16	−0.96	− 0.655	21
	Miscellaneous.	−0.04	0.23	−0.49	0.51	0.59	0.61	0.411	27
Aug. 2, to Dec. 31 .	180 0	+0.22	−0.52	−0.43	−1.39	−0.79	−0.57	0.580	23

Value of one revolution of the Telescope Micrometer.

The following observations have been made by Prof. Coffin, with the aid of the collimating eye-piece and basin of mercury, for determining the equivalent of one revolution of the telescope micrometer.

Let C represent the Circle Readings, corrected for runs and errors of division [a];

m, the corresponding micrometer readings, when the wire employed is brought into coincidence with its reflected image, corrected for the excentricity of the micrometer head[b];

n, the number of positions of the circle;

dm, a small quantity applied so as to make the several values of μ, multiples of $2^r.39$, the equivalent nearly of $2'.30''$.

$$\mu = m - \frac{1}{n}[m] + dm$$

$$a = C - \frac{1}{n}[C] + 62''.75\ dm$$

The relation of the micrometer to the field of view, so far as following a regular law, is expressed by the equation:—

$$\mu r + \left(\mu^2 - \frac{1}{n}[\mu^2]\right)\Delta r + \mu^3\ \Delta' r + \&c. \quad = a$$

in which r represents the equivalent of one revolution in the middle of the field, or at the fixed horizontal wire.

Each set of observations presents a symmetrical series, so that $\frac{1}{n}[m]$ is nearly $30r$.

The micrometer wire employed has been the middle one, or that designated as wire **3**. For the middle observation the fixed-wire was used, and the coincidence of wire **3** with it quoted.

TABLE D.

Value of Telescope Micrometer.

DATE. 1847.	Corrected Circle Reading. C.	No. of Read's	Corrected Mic. Reading. m.	No. of Read's	Equations. μ	Equations. $\frac{\mu^2-\frac{1}{n}[\mu^2]}{2.39^2}$	Equations. a	Values of r and Δr.
	° ′ ″		r.				′ ″	″
Feb. 1	179 54 57.90	4	25.1502	8	$-4.78r + 1.3(\Delta r)$†		$= -5\ 0.06$	$2\mu = 9.56$ | $r = 62.766$
	180 0 2.28	6	29.9980	8	0.00 −26		$= +0\ 0.08$	(h=2)
	180 5 0.88	4	34.7572	8	+4.78 +1.3		$= +4\ 59.98$	
	180 0 0.35		29.9685					″ $2.6 \times 2.39^2\ \Delta r = -0.08$
	(n=3.)							(2.6) $\Delta r = -0.0050$
			r.				′ ″	″
Sep. 29	179 47 29.64	*d 1	18.0102	8	$-11.95r + 15(\Delta r)$		$= -12\ 29.96$	$2\mu = 23.90$ | $r = 62.755$
	52 30.15	d 1	22.7963	8	− 7.17 − 1		$= -7\ 29.83$	14.34 | .747
	57 30.10	d 1	27.5733	8	− 2.39 − 6		$= -2\ 29.70$	4.78 | .736
	180 0 2.32	6	30.0123	16	0.00 − 10		$= -0\ 0.53$	(h=6) $r = 62.7510$
	2 29.90	d 1	32.3521	8	+ 2.39 − 6		$= +2\ 30.18$	″ $30 \times 2.39^2\ \Delta r = -0.08$
	7 30.52	d 1	37.1456	8	+ 7.17 − 1		$= +7\ 29.96$	2 − .13
	12 30.18	d 1	41.9215	8	+11.95 + 15		$= +12\ 29.88$	12 − .48
	180 0 0.40		29.9730					10 + .53
	(n=7)							(33.9) $\Delta r = -0.0004$

*d, Double reading.

†$(\Delta r) = 2.39^2\ \Delta r$.

[a] Table A, Wash. Ast. Obs., Vol. II, Int., page xii.
[b] Table E, " " " " " " xviii.

Positions of the fixed and micrometer wires relative to each other, and to the meridian.

On almost every day of observation, the coincidence of wire **3** with the fixed-wire has been determined from six or eight contacts (alternately on each side) at vertical wire IV. The mean of the micrometer readings for each coincidence is given in the margin of the left-hand page of the printed observations, with the day and sidereal hour at which each determination was made.

The coincidences at wires I and VII have also been frequently observed. Half the difference of these, or $\Delta m_3^1 = \frac{1}{2}$ [(VII) — (I)] obtained from all the determinations of the particular periods as presented in the following Table, constitute the reduction to parallelism with the fixed-wire, for observations made with mic. wire **3** at vertical wire I. It is given in parts of the micrometer, and with the sign with which it is to be applied to the micrometer readings.

The same table contains also the reductions to parallelism with the horizon, both for mic. wire **3** and the fixed-wire. They are derived from observations of stars, where several bisections have been made at the same culmination; and are the corrections to be applied to the readings of the micrometer or circle, according to the terms in which they are expressed, when the observation has been made at vertical wire I.

From April 14 to Aug. 4, Prof. Coffin was prevented by a disease of the eyes from making any observations.

TABLE E.

Reductions at vertical wire I,

to parallelism with	FIXED-WIRE.	HORIZON.		
of observations with . . .	*Wire* **3**.	*Wire* **3**.		*Fixed-Wire.*
	$\Delta' m_3^I$	Δm_3^I	Δc_3^I	Δc^I
	r.	*r.*	*″*	*″*
1847. Jan. 5 to Feb. 6	+ 0.0020	+ 0.0097 =	— 0.61	— 0.48
Feb. 12 April 13	0.0075	.0149	0.93	0.46
April 14 May 25	. .	.0194	1.22	. .
Aug. 5 Sep. 6	— 0.0020	.0112	0.69	0.82
Sep. 27 Oct. 15	+ 0.0118	. .	. .	. .
Oct. 15 Dec. 4	— 0.0004	.0145	0.91	0.94
Dec. 18 Jan. 21	— 0.0014	+ 0.0006	—0.04	— 0.13

The coincidences of the other micrometer wires at the vertical wires I, IV, and VII have also at several times been determined. The differences of the coincidences for wire **3** from these, or $\Delta m_w^v = (\mathbf{3})^v - (w)^v$, ($v$ symbolizing the vertical, and w the micrometer wire) are given in the following table. They constitute the reductions of the micrometer readings, when the observations have been made with the other wires, to what they would have been, if mic. wire **3** had been employed.

Table F.

Reduction of micrometer observations, Δm^{v}_{w}

For Mic. Wire.		1.			2.			4.		
At vertical wire		*I.* $\Delta m^{I}_{1.}$	*IV.* $\Delta m^{IV}_{1.}$	*VII.* $\Delta m^{VII}_{1.}$	*I.* $\Delta m^{I}_{2.}$	*IV.* $\Delta m^{IV}_{2.}$	*VII.* $\Delta m^{VII}_{2.}$	*I.* $\Delta m^{I}_{4.}$	*IV.* $\Delta m^{IV}_{4.}$	*VII.* $\Delta m^{VII}_{4.}$
		r.	*r.*	*r.*	*r.*	*r.*	*r.*	*r.*	*r.*	*r.*
1846.	Nov. 21 . . .	+0.0072	+0.0083	+0.0115	−0.0383	−0.0346	−0.0255	+0.0107	+0.0225	+0.0362
1847.	April 3 . . .	.0046	.0096	.0094	.0233	.0120	— .0007	.0229	.0402	.0586
	9 . . .	.0050	.0086	.0117	.0227	.0107	+ .0004	.0296	.0483	.0660
	21 . . .	.0053	.0014	.0023	.0222	.0158	— .0037	.0238	.0415	.0613
	Aug. 5 . . .	+ .0035	.0063	.0049	.0223	.0147	.0050	.0188	.0357	.0529
	Nov. 5 . . .	— .0008	+ .0030	+ .0037	.0256	.0163	.0139	+ .0272	.0441	.0519
	Dec. 18 . . .	+ .0045	— .0125	— .0348	.0683	.0911	.1196	— .0101	+ .0028	.0082
1848.	Jan. 3 . . .	+0.0015	−0.0157	−0.0367	−0.0697	−0.0932	−0.1176	−0.0220	−0.0073	+0.0012

On April 3, Dec. 18, and 1848, Jan. 3, it was necessary to press slightly upon the head of the screw, in order to bring wire **4** into coincidence with the fixed wire. Wire **5** could not be brought satisfactorily into coincidence; and its use was dispensed with.

The wires appear to have been disturbed between Nov. 21, 1846, and April 3, 1847: most probably between Jan. 1 and 5, when the motion of the wires was obstructed by shreds and by their catching in the saw-teeth. New wires were put in on Dec. 4.

PRINTED OBSERVATIONS.

The observations with the Mural Circle occupy pages 35 to 90 of this volume.

Column 1 of the left hand page contains the date of the observations, the day commencing with the culmination of the sun.

Column 2 contains the numbers for reference. The asterisks indicate the observations, which are referred to in the notes on the right-hand margin.

Column 3 contains the names of the objects observed. They have been taken from the several catalogues of stars in the following order of preference;

Nautical Almanac;

Catalogue of the British Association;

Weisse's Catalogus Stellarum ex Zonis Regiomontanis;

Bessel's Zones;

Lalande's Catalogue published by the British Association;

Piazzi's Catalogue;

Rumker's Catalogue of 12000 fixed Stars.

Stars not found in any of these are marked "Anonymous." The right ascensions and magnitudes (when noted) of those not found in the Catalogue of the British Association, are given in the margin of the right hand page. Stars contained in that catalogue are designated simply by the constellation and number.

The term ("Mic.") in this column, indicates that the bisection of the star was made with one of the micrometer wires. When any other wire than wire 3 has been used, its number and the reduction to wire 3, are given in the margin of the right hand page.

Column 4. The numbers in this column indicate the vertical wire, or the position between two vertical wires, at which the object was at the instant of observation.

In cases where a number of observations have been made with the micrometer, and the mean only given the numbers in this column denote the mean of the several points of observation. An asterisk indicates that the observation was made soon after the star's passage of the wire.

Column 5 contains the hour angle at which the object was observed. It is given for the sun in all cases, and for the moon and circumpolar stars, whenever the time of making the observation has been noted.

The hour angle for the sun or moon, is $(\alpha - \tau)\ (1 - \frac{da}{3610^s})$;[a]

α representing the right ascension of the object,

τ, the sidereal time of observation, and

da, the motion in right ascension in one hour of mean time.

The right ascensions of these bodies have been interpolated from the Nautical Almanac, with the assumed longitude from Greenwich, $5^{h.}\ 8^{m.}\ 14.64^{s.}$ West.

Columns 6 to 12, contain the readings of each of the six circle microscopes, with their mean.

The degrees and minutes are taken from microscope A alone.

In making these readings, the cross wires of the microscopes have been moved either to the division nearest to their zero points, (but all in the same direction, either *advance* or *retrograde*;) or to both divisions, on each side of the zero points; in which case the mean of the two readings only is given, and such *double* readings are designated by the letter *d* in the column of "Means."

Column 13 contains the readings of the telescope micrometer, when the observations were made with one of the micrometer wires.

In many cases, several bisections of a star have been made at the same culmination, the several micrometer readings reduced to the meridian, and the mean only given in this column. Such cases with the number of observations are noted in the margin of the right-hand page.

The reduction to the meridian is expressed by the formula,

$$dm = -\overset{r}{0.00206} \tan \delta\ (IV - v)^2;$$

in which v denotes the vertical wire, or the position between two vertical wires, at which the observation

[a] Table XIV. Wash. Ast. Ob'ns, Vol. I, App. p. 76.

'as made. The sign of this reduction is changed for direct observations below the pole, and for observations y reflection of stars above the pole.

Columns 14 and 15, contain the readings of the barometer, (which is one of Newman's,) and of its attached thermometer."

Column 16 contains the readings of the external thermometer, which is placed on the north side of ıe observing room, outside. The thermometer used was that which is designated as No. 2, in the Appendix of the Washington Observations, Vol. I., (pages 45–56;) from which the following corrections of its :ale are quoted.

TABLE I.

Reductions of Scale reading to Normal Temperature.

Therm. Scale.	No. 2.	Therm. Scale.	No. 2.
o	o	o	o
5	—0.21	62	+0.10
10	.22	64	.09
15	.17	66	.09
20	.11	68	.10
25	.06	70	.12
30	— .02	72	.11
32	.00	74	.10
34	+ .02	76	.09
36	.04	78	.08
38	.06	80	.06
40	.08	82	.05
42	.09	84	.03
44	.10	86	+ .02
46	.11	88	— .01
48	.12	90	.03
50	.13	92	.03
52	.12	94	.04
54	.11	96	.04
56	.11	98	.05
58	.10	100	—0.06
60	+0.10		

Columns 17, 18, and 19, contain the readings of the several thermometers attached to the instrument, 'iz: one inside of the stone pier, and two upon the face of the pier, the one a few inches above, the other ı few inches below the limb of the circle.

The margin of the left-hand page contains:

1. The micrometer coincidence determined in the manner described on page xvi, with the day and sidereal hour at which each determination was made.

2. The value of one revolution of the micrometer screw, which has been employed in reducing the observations derived from the determinations given in table D, (p. xv,) or in the last part of the year, from determinations made in 1848.

3. The semi-diameters of the sun, moon, and planets, obtained from the observations, corrected for refraction, parallax, and defective illumination.

4. The error of runs with the corresponding temperatures of the circle and pier, from the determination of the same day, as recorded in table A, (pages xii to xiv,) when six observations have been made; otherwise from the determination for the period, table B, (page xiv.)

5. Notes relating to the adjustment and condition of the instrument.

Column 1 of the right-hand page, contains the "numbers for reference," and is a repetition of column 2, of the left-hand page.

Column 2 contains under the heading of "Corrections for Instrument:" 1. The correction for the "errors of graduation," when the circle reading is nearly 0°, 60°, &c., 10°, 70°, &c., taken from Tables A and B, Wash. Ast. Obs., Int., page xii. These, in the few cases where they have been applied, are noted in the margin.

2. The correction for runs, represented by

$$r = -\mathrm{C}\frac{\mathrm{R}}{5'} \qquad \text{for an } \textit{advance} \text{ reading;}$$

$$r = (5' - \mathrm{C})\frac{\mathrm{R}}{5'} \qquad \text{for a } \textit{retrograde} \text{ reading;}$$

$$r = (2'\tfrac{1}{2} - \mathrm{C})\frac{\mathrm{R}}{5'} \qquad \text{for a } \textit{double} \text{ reading;}$$

$$\mathrm{R} = \mathrm{R}' + 0''.061\left(\frac{t+t'}{2} - t_0\right) - 0''.014\,(t - t') - 0''.036\,(\tau - \tau_0):$$

where C is the circle reading from column 6 and 12, expressed in minutes, and omitting the largest contained multiple of 5′; R′, the error of runs, and t_0 and τ_0 the temperatures of the circle and stone respectively, from the margin of the left hand page; and τ, t and t' the readings respectively of the stone, upper and lower thermometers, in columns 17, 18, and 19, of the left hand page.

3. The correction for difference of runs, or the inclination of the microscopes, viz:

$$dr = -\mathrm{C}^2\frac{d\mathrm{R}}{50'} \qquad \text{for an } \textit{advance} \text{ reading;}$$

$$dr = -(5' - \mathrm{C})^2\frac{d\mathrm{R}}{50'} \qquad \text{for a } \textit{retrograde} \text{ reading;}$$

$$dr = -(2'\tfrac{1}{2} - \mathrm{C})^2\frac{d\mathrm{R}}{50'} - \frac{1}{8}\,d\mathrm{R} \qquad \text{for a } \textit{double} \text{ reading;}$$

dR being taken from Table C, (page xviii.) This correction, though minute, is yet constant or nearly so, for all observations of the same star.

4. The correction for the inclination of the wire, with which the observation has been made, expressed by

$$i = (IV - v)\frac{dc_1}{3} \qquad \text{for an observation with the } \textit{fixed} \text{ wire.}$$

$$i = (IV - v)\frac{dc'_3}{3} \qquad \text{for an observation with } \textit{micrometer wire}\ \mathbf{3};$$

where v represents the position of the object at the instant of observation at or between the vertical wires, (left hand page;) as in column 13; and dc' and dc'_3, the reductions for observations made at the vertical wire I

as given in Table E, (page xvi.) Observations with the other micrometer wires are first reduced to wire **3**, by applying the reductions given in Table F, (page xvii,) or in the right-hand margin. This correction has not usually been applied, where the observations are symmetrical with reference to vertical wire IV.

5. The reduction to the meridian, (if not already applied to the mic. readings in column 13 of the left-hand page,) obtained from the expression,* $\mu = \text{cosec } 1'' \sin^2 \frac{1}{2} h \sin 2\delta$;

where h is the hour angle, in column 5, of the left-hand page:

or from the expression, $\mu = 0''.1292 \tan \delta \, (IV - v)^2$

where v denotes as before (pages xviii and xx) the position of the object with reference to the vertical wires.

This reduction is applied with the opposite sign to observations by reflection of stars above the pole, and to direct observations of stars below the pole.

6. The reduction, μ', in observations of the sun and moon, due to their change of declination in the sidereal interval, h', from the meridian, (vide column 5, of the left-hand page;) obtained from the expressions,

$\mu' = h' \Delta' \delta$

$h' = a - \tau$ expressed in seconds of time;

$\Delta' \delta = \frac{\Delta \delta}{3610} = .000277 \, d\delta$ for the sun;

$\Delta' \delta = \frac{\Delta \delta}{601.6} = .001662 \, d\delta$ for the moon;

$\Delta \delta$ being the change of declination for the sun in one hour, or for the moon in ten minutes of mean time.

7. The reduction to the fixed wire for an observation made with a micrometer wire, or

$$dC = (m_0 - m) \, r,$$

m_0, denoting the micrometer coincidence, and r the micrometer value, in the margin of the left-hand page; and m, the micrometer reading in column 13, of the left-hand page, corrected by means of Table E, (Wash. Ast. Obs., Vol. II, Int., page xviii); and in the case of observations with other micrometer wires, reduced to wire **3**, by the quantities noted in the margin, or contained in Table F, (page xvii.)

Column 3 contains, under the heading of "Corrections for Objects:"

1. The reduction for atmospheric refraction, computed from Bessel's tables, for the observed zenith distance and the readings of the barometer and the attached and external thermometers, (the latter corrected by the quantities in Table I, page xix,) given in columns 14, 15, 16, of the left-hand page. An expansion of these tables is given in the Wash. Obs., Vol. I, Appendix, pages 58–71.

Z, representing the zenith point in column 5;

C', the circle readings, corrected by the quantities in the preceding column, except (5) and (6);

the observed zenith distance, $z = C' - Z$ for a *direct* observation,

$z = 180° - (C' - Z)$ for an observation by *reflection*.

* Tables XIII, XVI to XIX, App. Wash. Obs., Vol. I, pp. 76 to 79.

The correction for refraction, as applied to the circle readings, is affected with the sign of tan (C′ — Z.)

2. The reduction for parallax, in observations of the sun, moon, and planets, obtained from the formulas;

for the sun and planets, $\log p$ (in seconds) $=$ $0.93280 + \log \text{sine } (z' - 11' 14''.54) - \log d$;

for the moon, $\log \text{sine } p' = \log \text{sine } \pi + \log \text{sine } (z' - 11' 14''.54) + 9.9994302$,

or $\log p'$ (in seconds) $= \log \pi$ (in seconds) $+ \log \text{sine } (z' - 11' 14''.54) + 9.9994302$,

$$+ \log \frac{\text{sine}}{\text{arc}} (\text{for } \pi) + \log \frac{\text{arc}}{\text{sine}} (\text{for } p')^*$$

$$p = p' \mp \tfrac{1}{2} (p' \mp s) \text{ sine } p' \text{ sine } s,\dagger$$

the *upper* signs being adapted to an observation of the *upper* limb, the *lower* signs to an observation of the *lower* limb. In these expressions

z' represents the observed zenith distance, corrected for refraction;

d, the distance of the sun or planet from the earth;

π, the equatorial horizontal parallax of the moon, which for these observations has been interpolated from the Nautical Almanac, with second differences.

s, the moon's semi-diameter;

and p, the required reduction for parallax, which, as applied to the circle reading, is affected with the sign —.

Assuming from Bessel's most recent determination for the terrestrial spheroid, $\frac{1}{p} = .003343$,

and from Encke, the mean horizontal parallax of the sun, $P = 8''.5776$;

the reduction for the latitude, 38° 53′ 39″.25, is — 11′ 14″.54,

$\log \rho = \log \frac{R}{A} = 9.9994302$, and

$\log \rho P = 0.93280$.

The reductions for refraction and parallax have been computed for the observed limbs of the sun or moon, or for each limb separately, when both have been observed.

3. A reduction on account of defective illumination, applied in some cases to observations of one of the limbs of the moon, Venus, or Mercury. Such cases, together with the corrections applied, are noted in the margin.

Let a represent the difference of the right ascensions of the moon or planet, and sun,

δ_s, the declination of the sun,

δ_m, the declination of the moon or planet,

s, the apparent semi-diameter of the moon or planet, and

ϑ, the angle of position of the line joining the cusps;

then $\tan \vartheta = \text{cosec } a \cos \delta_m, \tan \delta^s - \cot a \sin \delta_m$,

* Tables IX and X, Wash. Ast. Obs., Vol. I, App. p. 74.

† Table XI, " " " " p. 74.

a *negative* value of which indicates a defective illumination of the *north* limb;

and, ϑ being taken numerically less than 90°, the correction for an observation of a *cusp* becomes

$$ds = s \text{ versin } \vartheta,$$

to be applied to the observation of the defective limb, so as to augment the measured diameter.

For Mercury, ϑ may readily be obtained from a celestial globe, by bringing the geocentric place of the planet to the zenith point of the globe, and passing the quadrant of altitude through the sun's place; ϑ is then the arc on the horizon intercepted between the quadrant of altitude and the east or west points; the *northern* or *southern* position of this arc indicating, respectively, a full illumination of the *north* or *south* limbs.

If we take i to represent the angular distance of the sun and earth, as viewed from the moon or planet, and make

$$\sin \vartheta' = \sin \vartheta \sin i,$$

the correction for an observation made on the *gibbous* portion of the disk becomes

$$ds = s \text{ versin } \vartheta'$$

For Mercury and Venus, ϑ' may be obtained more conveniently from a celestial globe; by bringing the planet's geocentric place to the south point of the horizon, and measuring the altitude or depression of its heliocentric place; an *elevation* indicating a defective illumination of the *north* limb; a *depression*, a defective illumination of the *south* limb.

The proximity of the moon to the earth affords for that body a more convenient method of determining ϑ', by the substitution of geocentric for heliocentric places.

Making
$$\tan \delta' = \tan \delta_m \cos \alpha;$$
$$\sin \vartheta' = \sin (\delta_s - \delta') \cos \delta_m \sec \delta',$$

a *negative* value of which indicates a defective illumination of the *north* limb.

4. The reduction for semi-diameter, when only one limb of the sun, moon, or a planet has been observed, obtained from the expressions,

$$\log s = 2.9826782 - \log d \quad \text{for the sun;}$$

$$\left.\begin{aligned} \log \sin s &= 9.4353665 + \log \sin \pi \\ \text{or } \log s &= 9.4353665 + \log \pi + \log \tfrac{\sin}{\text{arc}} (\text{for } \pi) + \log \tfrac{\text{arc}}{\sin} (\text{for } s)^* \end{aligned}\right\} \text{for the moon;}$$

and from the Nautical Almanac, for the planets, in the very few cases, in which it has been required.

Column 4 contains the corrected readings, obtained by applying the reductions in columns 2 and 3 to the mean of the circle readings in column 12 of the left-hand page.

For the sun, moon, and planets, when both limbs have been observed, the mean of the two readings is given, so that the quantities in this column are the corrected readings for the centers. In such cases, half the difference of the two corrected readings constitute the observed semi-diameters in the margin of the left-hand page.

Column 5 contains the zenith points, derived from the observed nadir points, given in the last columns of the right-hand page.

* Table IX, X, Wash. Ast. Obs., Vol. I, App. p. 74.

Column 6 contains the "Apparent Declinations," deduced from the observations. Representing by C″, the corrected reading in column 4; by Z the zenith point in column 5; and assuming the latitude of the Observatory to be 38° 53′ 39″.25 north; the apparent declination,

$$\begin{aligned}
\delta = \quad & 38\ 53\ 39.25 - (C'' - Z), \text{ for an observation } \textit{direct, above} \text{ the pole,} \\
= -\ & 218\ 53\ 39.25 + (C'' - Z), \text{ " " } \textit{direct, below} \text{ the pole,} \\
= -\ & 141\ \ 6\ 20.75 + (C'' - Z), \text{ " " } \textit{by reflection, above} \text{ the pole,} \\
= \quad & 321\ \ 6\ 20.75 - (C'' - Z), \text{ " " } \textit{by reflection, below} \text{ the pole;}
\end{aligned}$$

in which expressions C″ may always be made greater than Z, by adding 360°.

The declinations in this column for the sun, moon, and planets are the declinations of the centers of those objects. Those of Polaris are the mean results of all the observations at the same culmination, combined by means of the formulas in §11, page xxvii, Wash. Ast. Obs., vol. II, Int.

Column 7 contains for the fixed stars, the reductions to the mean equinox and ecliptic at the commencement of the year 1850, or at that moment of time when the sun's mean longitude will be 281°.* They have been computed by means of Bessel's formulas, with Struve's constant of aberration, and the co-efficients for nutation and precession in the Introduction to the Catalogue of the British Association.

The proper motions of the Nautical Almanac stars, from the catalogue in the Almanac for 1848, and of 1164 B. A. C. and 61^2 Cygni from the Catalogue of the British Association, are included: those of a^1 Geminorum and 4345 B. A. C. have been assumed the same as for their companions.

For Polaris, δ and λ Ursæ Minoris, γ Cephei, and α Lyræ, the reductions include the terms depending on $2\mathfrak{C}$, also the other minor terms, given in the formulas in Peters' "Numerus Constans Nutationis."

Column 8 contains the initials of the names of the observers, Lieutenant Page and Professor Coffin.

The remaining columns contain the determinations of the nadir points, according to the method described on page xi. In general, each reading indicates a separate and distinct determination, involving a new coincidence of the wire with its reflected image and a new reading of the circle. The day and sidereal hour of each determination are also given, together with the observer's initial. The correction given at the end of each determination includes the correction of runs, and — 0″.187 for the accidental error of graduation.†

The margin contains the readings of the stone, upper and lower thermometers at each determination of the nadir point; notes, relating to particular observations, designated by the reference numbers; and also to the determinations of the nadir point, among which are given half the estimated distances of vertical wire IV from its reflected image, under the designation of apparent error of collimation.

* 1850, January 1. 0*h*. 13*m*. mean time, Washington.

† Wash. Ast. Obs., Vol. II, Int., Table A, p. xii.

MEAN DECLINATIONS, 1850.0.

Pages 261 to 265, contain the mean declinations for 1850.0 of the several stars, as determined from the observations with this instrument. They have been obtained by applying to the apparent declinations in column 6 of the right-hand page of the printed observations, (pages 44 to 159,) the reductions to 1850.0 in column 7.

The brackets indicate the observations which, in general for reasons stated in the notes to the printed observations, are regarded as deserving rejection.

The weights, *hh*, assigned to the several observations of Polaris, are obtained from the formulas in §§ 9 to 11, (Wash. Ast. Obs., Vol. II, Int., page xxvii.)

The corrections from Table A and A′, (Wash. Ast. Obs., Vol. II, Int., pages xii and xiii,) which have been applied for errors of division, are also given.

In the General Catalogue, commencing on page 309, are given for each star the mean results of these declinations and the probable error of each determination. These probable errors do not include the probable error of graduation, viz: $\epsilon_1 = \pm 0''.07$.[a]

APPARENT DECLINATIONS AND VERTICAL SEMI-DIAMETERS OF THE SUN, MOON, AND PLANETS.

Pages 291 to 295, contain the apparent declinations of the centers of the sun and planets, transferred from column 6 of the right-hand page of the printed observations, (omitting those regarded as deserving rejection:) also the apparent declinations of the center of the moon, carried out for each limb separately, when both have been observed. These are accompanied by the Washington mean time of observation, computed from the sidereal times to which the observations have been reduced, (column 5, page xviii, and § 6, p. xxi;)

The limb observed, when only one;

The seconds of declination interpolated from the Nautical Almanac, with the Long. $5^{h}\ 8^{m}\ 14^{s}.64$; except those of Neptune, which have been taken from Mr. S. C. Walker's Ephemeris, published by the Smithsonian Institution;

The differences of the computed from the observed declinations, or "C — O;"

The reductions for defective illumination which have been applied to some of the observations of the moon.

There are also given:

The observed vertical semi-diameters, transferred from the margin of the left-hand page of the printed observations;

The computed semi-diameters, for the planets, taken from the Nautical Almanac; for the sun and moon computed by means of the formulas, (page xxiii;)

The difference of the computed from the observed semi-diameters, or "C — O."

[a] Wash. Ast. Obs., Vol. II, Int. p. xxv.

From these last we have for the excess of the measured over the tabulated semi-diameters;

	"	"	
of the Sun,	2.26	± 0.088	from 46 observations.
Moon,	4.63		3
Mercury,	0.45		3
Venus,	0.75		7 near superior conjunction.
	1.95		5 " inferior "
Mars,	2.15		8
Jupiter,	0.68		5
Saturn,	0.66		17

In observing these bodies, it is easier to bring the edge than the middle of the wire into contact with the limb. A part of this excess is doubtless due to this mode of observing, and hence a deduction of 0".8, the semi-diameter of a wire, may be allowed. These quantities are approximately the corrections which should be applied to declinations, which have been obtained from observations of one limb only; with the sign — for observations of the north, and the sign + for those of the south limb.

THE MERIDIAN CIRCLE.

The Meridian Circle is represented in Plates VII and VIII, Vol. I. The object-glass of the telescope has a clear aperture of 4.5 inches, and a focal distance of 58.2 inches. The circle is 30 inches in diameter, divided on the face into arcs of 3′ by heavy lines cut in silver; the subdivision is effected by four microscopes, each reading to single seconds. A detailed description of the whole instrument, with an account of some of its errors, is given in the preface to Vol. II, (pages xxxvii, &c.)

The only additions since made to the investigations of permanent errors, have been the following respecting the inequality of pivots. In these, the telescope was placed horizontal, and, with the exception of the first observation, the level was read with the object-glass alternately north and south, in each portion of the instrument.

Date.	ALIDADE EAST. E. end high.	ALIDADE WEST. E. end high.	EXCESS OF Alidade Pivot.	Observer.
	div.	*div.*	*div.*	
1849, Jan. 8	+ 5.30	+ 2.38	1.46	Prof. Keith.
1850, Oct. 22	Object-glass N 2.77	+ 0.12	1.32	Prof. Major.
	S 2.61	— 1.21	1.91	
1851, Jan. 23	N 1.51	— 1.20	1.35	"
	S 1.56	— 0.76	1.16	
Jan. 27	N 2.00	— 1.25	1.62	"
	S 2.41	— 1.00	1.70	
Jan. 28	N 1.94	— 1.26	1.60	"
	S 1.73	— 1.25	1.49	
July 5	N 2.23	— 0.32	1.28	"
	S 2.58	— 0.38	1.48	
July 28	N 1.98	+ 0.05	0.96	"
	S 1.87	+ 0.18	0.84	
"	N 1.28	— 0.06	0.67	"
	S 1.85	+ 0.39	0.73	
Aug. 1	N 1.52	+ 0.54	0.49	"
	S + 1.78	+ 0.65	0.56	
1852, June 28	N — 0.36	— 3.45	1.54	Mr. D. Major.
	S — 0.42	— 3.48	1.53	

The discrepancies between these separate determinations, as well as that of the single one in 1845 as compared with these, are probably due to the injurious mode of reversal, for which no proper substitute has yet been adopted. The mean of the above results has been taken as the most probable value for the difference of pivots, and the corresponding correction, viz: $\pm 0.625^{div.} = \pm 0.070^{s.}$ (+ for alidade West), as the true quantity to be applied to the level-readings since the beginning of 1849. The reductions in 1847 and 1848, as will be seen below, do not require the use of this correction.

The system of transit and declination wires used in the year 1846 remained unchanged until the 29th of March, 1847, when it was found necessary to remove the micrometer-screw in order to have it cleaned. The micrometer-head, which had fitted too loosely, was replaced by another, divided like the former into sixty equal parts. While doing this, micrometer-wire 6 was accidentally broken, and a new one immediately inserted. The screw and diaphragm were then restored to their places in the telescope, and the adjustment for verticality of the middle transit-wire made by observing the image of the wire reflected from a surface of quicksilver, the telescope being moved a little to and fro, and changing the position of the diaphragm until the image appeared equi-distant from the wire itself through the whole length of the field. The image was then found to be east of the wire by about twice the thickness of the wire itself. On the 5th of April, the diaphragm was moved eastward so as to bring the wire and its image into exact coincidence. On the 7th, a more close adjustment for verticality was made. On the 17th of July, the micrometer-screw was again taken out and cleaned. The fixed horizontal wire, which had been slack and useless for some time, was removed, and a new one was inserted in its place. The diaphragm was then restored and adjusted so as to make the middle transit-wire vertical and coincident with its reflected image. The micrometer head also was adjusted to read zero when the middle micrometer wire coincided with the fixed horizontal wire. On the 4th of September, it was found that from some unknown cause the whole system of wires had been turned around a little, as though the box containing it had been partially unscrewed. This was corrected on the 6th, by help of the surface of quicksilver, as before.

The equatorial intervals of the transit-wires were obtained in the usual manner from observations of circumpolar stars: the adopted values are:

Mean—A.	Mean—B.	Mean—C.	Mean—D.	Mean—E.	Mean—F.	Mean—G.
$+ 32.937^{s.}$	$+ 21.838^{s.}$	$+ 10.980^{s.}$	$- 0.043^{s.}$	$- 10.919^{s.}$	$- 21.921^{s.}$	$- 32.861^{s.}$

An attempt was again made, as in last year, to determine a coefficient of temperature, but without success.

Owing to the want of a proper reversing apparatus, the instrument was suffered to remain, during the year 1847, in the same position as in 1846, viz: with the alidade East.

For determining the inclination of the axis to the horizon, the striding level was consulted as usual, and the error of collimation obtained by comparing the result of the level-readings with the distance of the middle transit-wire from its image reflected from the quicksilver surface; this distance being estimated by help of the micrometer, as described in the preface to Vol. II, (page lv.) It was discovered, however, about the com-

mencement of the year 1849, and immediately previous to the first of the readings given above, that when the striding-level was placed on the pivots, the axis of its tube was not in the same plane with that of the pivots. The period during which this mal-adjustment had existed being unknown, it was deemed advisable to forego the determination of absolute time during the years 1847 and 1848. The level-readings were however employed in connection with the data furnished by the collimating eye-piece, in obtaining an approximate value for the collimation, to be subsequently corrected by help of the observations of stars. The agreement found throughout the year between the clock-errors furnished by stars of different declinations was such as to require no sensible correction of these assumed values, and to render it extremely probable that the above-noticed defect of adjustment was without material influence during 1847.

The adopted values of c, reduced to the mean of wires, and corrected for diurnal aberration, are the following:

Dates.	c.	No. of Obs.
	s.	
Jan. 1 to Mar. 29	+ 0.294	6
Mar. 29 Apr. 25	— 0.341	7
Apr. 26 June 11	— 0.531	5
June 13 July 16	— 0.752	5
July 17 Oct. 14	— 0.437	17
Oct. 15 Nov. 2	— 0.293	4
Adjusted for level and collimation, Nov. 2.		
Nov. 2 Dec. 31	+ 0.038	10

The values of $(n + c,)$ as determined from circumpolar stars, are much less fluctuating since, through the evident periodical change in c between March 29 and November 2, there appears a remarkable uniformity in the results for $(n + c.)$ The adopted values are:

Dates.	$n + c$	No. of Obs.
	s.	
Jan. 1 to Jan. 14	+ 0.251	1
Jan. 21 Mar. 29	+ 0.082	8
Mar. 29 Nov. 2	— 0.579	48
Nov. 2 Dec. 31	+ 0.435	7

The correction $(n + c) \tan \delta + c (\sec \delta - \tan \delta)$ having been applied to all the observed transits, the value of $\Delta t + m$ was obtained by comparing the corrected transits of such fundamental stars as had been observed, with their tabulated places. The apparent right ascensions are now given by the usual formula,

$$a = t + \Delta t + m + (n + c) \tan \delta + c (\sec \delta - \tan \delta).$$

The micrometer-wires of the diaphragm are designated by the numbers **1**, **2**, **3**, **4**, **5**, **6**, **7**, of which **1**, with the circle **E**, is the most southern, or uppermost in the field, the observer looking south. The distances be-

tween these wires have been determined by means of the collimating eye-piece and circle-readings; each wire having been made to coincide either with its own image or that of wire **4**. The mean of all the determinations gives:

	4 — 1	**4 — 2**	**4 — 3**	**4 — 5**	**4 — 6**	**4 — 7**
Jan. 1 to Mar. 29,	— 20′ 30″.25	— 14′ 38″.54	— 5′ 55″.42	+ 5′ 46″.13	+ 14′ 28″.94	+ 20′ 19″.03
Mar. 29 Dec. 30,	— 20 31 .32	— 14 40 .37	— 5 55 .95	+ 5 46 .58	+ 14 28 .19	+ 20 18 .65

The value of one revolution of the micrometer-screw has been obtained from the intervals **4 — 3** and **4 — 5**, by comparing the observed coincidences of **3**, **4**, **5**, with the fixed wire. Previously to March 29, the value found in 1846, viz: 34″.433, was used. But, after the changes then made, Professor Major determined anew the value and found 34″.406, which was adopted for the remainder of the year. The above intervals expressed in revolutions of the micrometer-screw, furnish each a constant to be applied to the micrometer reading, whenever the corresponding wire has been used in the observation. The micrometer correction to be applied to the circle reading is $C_f + m - C$ where C_f denotes the above constant, m denotes the micrometer reading corresponding to wire **4**, and C the coincidence of wire **4** with the fixed wire.

The correction for runs has been determined and applied in the same manner as for the Mural Circle. The effect of variations of temperature, in itself much less than where the microscopes are attached immediately to the stone pier, as with the Mural, is here completely masked under the large errors of graduation and of reading off; and an attempt to ascertain the law of any such effect, may be considered as quite hopeless. The adopted values of the error of runs for each night of observation, are given at the foot of the page in the printed observations.

The nadir point on the circle has been determined at least once, and often twice, on each day, by the collimating eye-piece. The details of these determinations, with the adopted values, accompany the observations themselves: and occupy part of the pages containing the latter.

The refractions have been computed from the tables prepared by Professor Coffin, and inserted in the Appendix to Vol. I, (pages 59 to 71.) The horizontal parallaxes, for the sun, moon, and planets, were computed from their tabular distances from the earth, as given in the Nautical Almanac.

The corrections for runs, zenith-point, refraction, and where necessary for micrometer reading, parallax and semi-diameter having been duly applied to the mean of the four microscope readings, the true geocentric zenith distance was obtained, counted in accordance with the numbering of the graduations on the circle, from the zenith towards the north, the southern distances being given as less than 360°, or negative. The addition of the latitude, assumed as 38° 53′ 39″.25, gave the required declination of the object.

The reductions of the stars' apparent places to the adopted mean equinox of 1850.0 were computed by help of tables equivalent to those given in Appendix C, of this volume. For stars that have been often observed, the reductions were prepared for each tenth day between the extreme dates, and thence interpolated for each observed culmination: for other stars the reductions were computed independently for each date.

The reductions to apparent right ascensions were performed by Professors Hubbard and Yarnall; those

in declination, by Professor Major, with the exception of the refractions, which were computed by Lieutenant Worden. The reductions to mean places were prepared under the direction of Professor Coffin.

EXPLANATION OF THE PRINTED OBSERVATIONS.

On the left-hand page:

Column 1 contains the date, the day being always supposed to commence with the transit of the Sun.

Column 2 contains the number for reference to the notes at the foot of the page.

Column 3 contains the designation of the object observed. Stars not belonging to the Nautical Almanac list are denoted in the order of preference, by their letter and constellation, their constellation and number in the catalogue of the British Association; the hour and number in Weisse's "Catalogus Stellarum, etc.;" the "Zone" of Bessel in which the star has been given, the number in the reduced catalogue of Lalande, or finally by the term Anonymous.

Columns 4–10 contain the observed times of transit over the vertical wires of the diaphragm.

Column 11 shows the mean of the wires observed, the reduction to the mean of the seven, in the case of broken transits, being given in another place.

Columns 12–15 give the readings of the four microscopes, with the degrees and minutes shown by the first, or microscope A.

Column 16 contains the mean of the readings.

Column 17 contains the reading of the micrometer.

Columns 18–20 give the readings of the barometer, and attached and exterior thermometer; the former in inches, the two latter in degrees of Fahrenheit's scale.

Column 21 contains the initial of the observer's name: Ma, denoting Lieutenant Maynard; Mu, Lieutenant Muse; and M, Professor Major.

On the right-hand page:

Column 1 is a repetition of column 2, on the preceding page.

Columns 2–3 show the corrections to the mean of observed transits as given on the preceding page. The first, for the clock $+m$, is taken from the small table in the margin of the left-hand page, where it is given for a certain epoch at the date of observation, with the hourly rate. The second, is the sum of the corrections for broken transits, for instrumental errors, and for semi-diameter; the latter being given separately in the small table in the margin of this page.

Columns 4–5 contain the corrections to be applied to the circle-readings; the first, for the instrument, being the sum of the corrections for runs and for micrometer-reading; the second, for the object, being the sum of the corrections for refraction, semi-diameter, parallax and reduction to the meridian.

Column 6 contains the readings thus corrected.

Column 7 gives the adopted zenith point, deduced from the readings at the extreme right of the page.

Columns 8–9 contain the observed apparent $\mathcal{R}$ and Dec.; the first, obtained by adding the numbers in

columns 2–3 of this page to the numbers in column 11 of the preceding; the second, by subtracting the zenith point from the numbers in column 6 of this page, and adding the assumed latitude to the remainder.

Columns 10–11 contain the reductions of the stars to the mean equinox of 1850.0.

The last five columns contain the details of the determinations of the nadir point, giving with the date and hour, the circle readings and the mean of each set.

The margin of the left-hand page contains, besides the quantities already explained, the adopted error of runs and the observed coincidences of mic. wire 4 with the fixed horizontal wire, with such notes and corrections as have occurred during the reductions.

In the margin of the right-hand page are given the corrections in R for semi-diameter, the observed vertical semi-diameters, and the corrections that have been applied to the circle-readings for defective illumination of the moon's limb. There are also given here the times corresponding to micrometer observations of the moon, of Polaris, or other objects observed at any distance from the middle transit-wire.

The mean places of the stars for 1850.0, obtained by adding to the apparent places the reductions in columns 10–11, have been collected together on pages 267–276. The arithmetical mean of the determinations here given, excluding a few cases where the numbers are enclosed in brackets, were then taken, and with the probable error where the observations were sufficiently numerous, inserted in the General Catalogue at the end of the volume. The apparent places of the sun, moon, and planets, are collected on pages 297–302, and compared with the tabular places as given by the Nautical Almanac. The quantity C — O is the excess of the computed over the observed place. The computed semi-diameters in R are the quantities used in the reductions, and already given in the margin of the printed observations.

PRIME VERTICAL TRANSIT INSTRUMENT.

For a full description and drawing of this instrument, the reader is referred to Vol. I, (Preface, pages li–xc, and plate IV.)

The system of wires mentioned in the Preface to Vol. II, (page lx,) was replaced on the 2d of January, 1847, by another, which continued in use until the 7th of September, when it was broken out by accident, and a new set introduced, which remained through the year. The intervals in both these new systems were substantially the same as in 1846, but no accurate determination was thought necessary, as only symmetrical observations were retained for reduction.

The level-tube furnished by the makers of the instrument, and in use at the commencement of the year, was, on the 22d of March, substituted by another marked No. 1652, and this being found unsatisfactory, gave place, on the 17th of July, to another, No. 2622, which was used through the remainder of the year. The assumed value of one division of each of these tubes is:

		"
Pistor & Martins	Jan. 1 to Mar. 22	1.50
Ertel, 1652	Mar. 22 July 17	1.13
Ertel, 2622	July 17 Dec. 31	0.94

The formulas for the reduction of observations are as follow:

Denoting by t and t' the observed times of transit in the E. over any given wire in the two positions of the instrument (N. and S.), and by t_i' and t_i' the similar transits in the W., and making

$$s = \tfrac{1}{2}\{(t_i' - t) + (t_i - t')\}$$
$$u = \tfrac{1}{2}\{(t_i' - t) - (t_i - t')\}$$

and denoting moreover by δ and $(\phi + b)$ the declination and the sum of the latitude and level-correction; then

$$\tan \delta = \tan(\phi + b) \cdot \cos s \cdot \cos u.$$

The computation is performed independently for each wire, and the mean of the results given in the pages of the printed observations.

The time of the star's meridian passage is easily found, by taking the half sum of corresponding transits in the prime vertical. In a complete observation there are seven of these determinations with telescope N,

and seven with telescope S. The mean is entered in the pages of printed observations. If the level indicate a change of position of the axis in the interval between E. and W. transits, a correction is applied to this mean, computed by the formula—

$$d\,T = \frac{I_E - I_W}{30\sqrt{(\sin(\phi+\delta)\,.\,\sin(\phi-\delta))}}\,.\,\sin\delta.\,\mathrm{cosec}\,\phi$$

The clock-correction being now also applied to the mean of wires, the error of the axis in azimuth may be obtained by comparing this corrected time with the tabular Æ of the star.

For observations of stars very near the zenith, with the micrometer, we have

$$\delta = \phi + b - C + m - \text{Red. to vertical} + \text{coll}^{n}.\ (\text{Tel. S.})$$
$$\delta = \phi + b + C - m - \text{Red. to vertical} - \text{coll}^{n}.\ (\text{Tel. N.})$$

where, besides the symbols already used, C denotes the micrometer reading at coincidence with the middle wire, and m, the micrometer reading for the star.

The reduction to the vertical is given in parts of a revolution of the mic. screw by the formula

$$m.\ k.\ \sin^2\tfrac{1}{2}\,t$$

where $m = 1^r = 26''.065$

$k = [5.6154551].\ \cos\delta.\ \sin\phi.$

t = hour angle.

The apparent Æ and Decl. have been reduced to the mean equinox of 1850.0, by help of the "Independent Constants" in the same manner as described above for the Meridian Circle.

The computations of apparent declinations were performed by Lieuts. Herndon and Parker; the reductions to mean places were computed by Prof. Hubbard, assisted by Mr. August Sonntag.

EXPLANATION OF THE PRINTED OBSERVATIONS.

On the left-hand page:

Column 1 contains the date, the day always commencing with the transit of the sun, and the date being that of the meridian passage of the star.

Column 2 contains the reference number for the notes.

Column 3 contains the designation of the objects observed, the names being given in the order of preference from the Nautical Almanac, the Catalogue of the British Association, or the reduced Catalogue of Lalande, the latter being chosen as furnishing a more definite reference than Bessel's Zones. When these authorities failed to furnish a name, the star is marked Anonymous. The only exceptions to this rule are in pages 212–215, which were printed in advance of the others and before the above designations had been adopted.

Column 4 indicates the vertical (E. or W.) in which the observation was made, the order being always E. W.

Columns 5–13 show the position of the telescope with reference to the pier, the instrument being always reversed between the transits given in columns 12 and 14.

Columns 6 . . . 20 contain the recorded times of transit over the vertical wires. When, as often happens with this instrument, any wires have been omitted or lost in either of the four sets of transits, the three corresponding observations have been suppressed as of no value.

On the right-hand page:

Column 1 is a repetition of column 2 of the preceding page.

Columns 2 and 3 contain the means of four readings of the level in the two positions of the telescope, (N. and S.)

Column 4 shows the excess of the numbers in column 3 over those in column 2.

Column 5 contains the mean of the two numbers in column 4, multiplied by the value of one division of the level. These quantities have been added to the assumed latitude in computing the declinations.

Column 6 contains the mean of observed transits, the first reading of wire A. in the E. being combined with the last of the same wire in the W., and similarly with the other wires. In a complete observation, therefore, the quantities in this column are the means of fourteen observations.

Column 7 contains the correction to be applied to the quantities just mentioned; it is the sum of the corrections for clock, azimuth, and change of level during the observation. The last of these three is obtained by the formula given above, and being applied to the mean of wires, a comparison of this corrected mean with the tabular Æ of the star, gives immediately the sum of the corrections for clock and azimuth.

Columns 8 and 9 give the apparent Æ. and Dec., the former obtained by adding together the numbers in columns 6 and 7; the latter computed from the intervals of transit in the manner described above.

Columns 10 and 11 contain the reductions to the mean equinox of 1850.0.

Column 12 gives the magnitude of the star.

Column 13 gives the initial of the observer's name; H. denoting Lieut. Herndon, and P. Prof. J. J. Pettigrew, U. S. N.

Column 14 is a repetition of column 3 of the preceding page.

In the margin at the foot of the left-hand page are given the sums of the clock and azimuth corrections, and the clock's hourly rate, for each date of observation. The notes entered in the observing book are also given in the margins, and the assumed latitude of the instrument is repeated at the foot of each right-hand page.

The mean Æ and Dec. of all the stars observed, have been collected together in pages 277 . . . . 284, and the mean results of each star embodied in the General Catalogue at the end of the volume.

DATE. 1847.	No.		OBJECT OBSERVED.	Times of transit over wires	Mean of wires	Corrections for Inst.	Semi-diam.	Clock.	Apparent R. A.	Reduction to 1850.0	Observer.
				s. s. s. s. s. s. s.	h. m. s.	s.	s.	s.	h. m. s.	m. s.	
Jan. 6	1	γ	[illegible]	[illegible]	[illegible]	[illegible]		— 15.[illegible]	[illegible]	—0 6.41	H.*
	2	α	Andromedæ	[illegible]	[illegible]	[illegible]	. . .	[illegible]	0 1 [illegible]	6.75	
	3	γ	Pegasi	[illegible]	[illegible]	.[illegible]	. . .	[illegible]	0 5 [illegible]	6.59	
	4		Weisse 0, [illegible]	[illegible]	[illegible]	[illegible]	. . .	[illegible]	0 30 [illegible]	6.66	
	5	β	Ceti	[illegible]	[illegible]	[illegible]	. . .	[illegible]	0 35 54.[illegible]	6.56	
	6		Weisse 0, [illegible]	[illegible]	[illegible]	[illegible]	. . .	[illegible]	0 41 30.[illegible]	6.60	
	7		Weisse I, 4[illegible]	[illegible]	[illegible]	[illegible]	. . .	[illegible]	1 3 [illegible]	6.64	
	8		Polaris	[illegible]	[illegible]	[illegible]	. . .	[illegible]	1 4 34.[illegible]	26.36	
	9		Weisse I, 225	[illegible]	[illegible]	[illegible]	. . .	[illegible]	1 14 1.55	6.57	
	10		Weisse I, [illegible]	[illegible]	[illegible]	[illegible]	. . .	[illegible]	1 33 [illegible]	6.43	
	11		Weisse I, [illegible]	[illegible]	[illegible]	[illegible]	. . .	[illegible]	1 39 [illegible]	6.38	
	12		Weisse I, [illegible]	[illegible]	[illegible]	[illegible]	. . .	[illegible]	1 39 [illegible]	6.38	
	13		Weisse I, [illegible]	[illegible]	[illegible]	[illegible]	. . .	[illegible]	1 39 54.64	6.38	
	14		Weisse I, [illegible]	[illegible]	[illegible]	[illegible]	. . .	[illegible]	1 45 [illegible]	6.34	
	15		Weisse I, [illegible]	[illegible]	[illegible]	[illegible]	. . .	[illegible]	1 52 32.12	6.29	
	16		Weisse I, [illegible]	[illegible]	[illegible]	[illegible]	. . .	[illegible]	1 56 34.[illegible]	6.22	
	17		Weisse I, [illegible]	[illegible]	[illegible]	[illegible]	. . .	[illegible]	1 59 21.[illegible]	6.22	
	18		Weisse II, 120	[illegible]	[illegible]	[illegible]	. . .	[illegible]	2 8 14.55	6.19	
	19		Weisse II, 1[illegible]	[illegible]	[illegible]	[illegible]	. . .	[illegible]	2 19 34.52	6.14	
	20		[illegible]	[illegible]	[illegible]	[illegible]	. . .	— 15.[illegible]	2 11 3[illegible]	6.14	
11	21		Weisse 0, [illegible]	[illegible]	[illegible]	[illegible]	. . .	— 15.05	0 27 41.[illegible]	6.96	
	22	α	Cassiopeæ	[illegible]	[illegible]	[illegible]	. . .	[illegible]	0 31 52.39	9.04	
	23	β	Ceti	[illegible]	[illegible]	[illegible]	. . .	[illegible]	0 35 54.41	8.96	
	24		Weisse I, 40	[illegible]	1 3 42.74 — 0	[illegible]	. . .	.05	1 3 27.49	8.72	
	25		Polaris	[illegible]	1 3 [illegible] — 1	31.[illegible]	. . .	.05	1 4 30.49	30.33	
	26		Weisse I, [illegible]	[illegible]	1 6 [illegible] — 0	[illegible]	. . .	.05	1 6 17.54	8.70	
	27		Weisse I, 91	[illegible]	1 6 42.53	[illegible]	. . .	.05	1 6 27.[illegible]	8.70	
	28		Weisse I, 225	[illegible]	1 14 1[illegible]	0.[illegible]	. . .	.05	1 14 1.44	8.65	
	29		Weisse I, 227	.. 14.5 [illegible]	1 14 44.4[illegible]	[illegible]	. . .	.05	1 14 24.21	8.65	
	30	θ[1]	Ceti	[illegible]	1 16 3[illegible]	[illegible]	. . .	.05	1 16 23.01	8.55	
	31		Weisse I, 564	[illegible]	1 32 7.73	[illegible]	. . .	.05	1 31 52.48	8.53	
	32		Weisse I, 594	[illegible]	1 33 16.3[illegible]	[illegible]	. . .	.05	1 33 1.05	8.52	
	33		Weisse I, 715	56.4 9.2 22.0 35.0 47.2 59.0 12.0	1 39 34.4[illegible]	0.[illegible]	. . .	.05	1 39 19.15	8.47	
	34		Weisse I, 725	.. .. 2[illegible]	1 40 34.4[illegible]	31.42	. . .	.05	1 39 47.97	8.47	
	35		Weisse I, 727	32.0 45.0 57.2 10.2 22.5 34.5 47.5	1 40 9.[illegible]	0.2[illegible]	. . .	.05	1 39 54.59	8.44	
	36		Weisse I, 813	40.0 53.1 5.6 1[illegible] 30.7 42.[illegible] 56.0	1 45 1[illegible]	[illegible]	. . .	.05	1 45 2.81	8.43	
	37		Weisse I, 942	9.5 22.2 35.1 47.7 0.2 12.2 25.2	1 52 47.44	.[illegible]	. . .	.05	1 52 32.19	8.37	
14	38		Weisse I, 40	5.2 17.[illegible] 30.[illegible] 43.2 55.5 7.[illegible] 20.[illegible]	1 3 43.01 — 0	0.25	. . .	.18	1 3 27.56	8.75	
	39		Polaris	29.0 36.5 35.5 36.0 .. 14.5 27.5	1 3 9.[illegible]3 + 1	32.69	. . .	.18	1 4 27.34	33.53	
	40		Weisse I, 72	11.5 24.2 36.6 49.2 1.6 13.6 26.[illegible]	1 5 49.07 — 0	0.25	. . .	.18	1 5 33.64	8.74	
	41		Weisse I, 225	.. 52.0 4.5 17.0 29.2 41.5 54.4	1 14 23.10	6.53	. . .	.18	1 14 1.39	8.68	
	42		Weisse I, 227	1.5 14.2 26.5 39.5 52.0 4.2 17.0	1 14 39.27	0.25	. . .	.18	1 14 23.84	8.68	
	43	θ[1]	Ceti	.. .. 26.2 39.0 51.0 3.3 16.2	1 16 51.14	12.96	. . .	.18	1 16 23.00	8.58	
	44		Weisse I, 564	30.2 43.0 55.5 .. 20.5 32.5 45.2	1 32 7.81	0.25	. . .	.18	1 31 52.38	8.55	
	45		Weisse I, 594	.. .. 4.2 16.8 29.1 41.3 54.1	1 33 29.10	12.79	. . .	.18	1 33 1.13	8.54	
	46		Weisse I, 715	56.3 9.2 22.0 34.2 47.2 59.2 12.0	1 39 34.30	0.25	. . .	.18	1 39 18.87	8.49	
	47		Weisse I, 725	25.5 .. 50.2 3.3 16.0 2[illegible].2 40.[illegible]	1 40 7.33	4.42	. . .	.18	1 39 47.73	8.49	
	48		Weisse I, 727	32.0 45.0 57.5 10.2 22.5 34.5 47.2	1 40 9.84	0.25	. . .	.18	1 39 54.41	8.48	
	49		Weisse I, 813	40.2 53.0 5.4 18.2 30.5 42.8 55.3	1 45 17.91	.25	. . .	.18	1 45 2.48	8.45	
	50		Weisse I, 942	10.0 22.7 35.2 47.3 0.2 12.1 25.2	1 52 47.53 — 0	0.25	. . .	.18	1 52 32.10	8.39	
	51	α	Arietis	9.2 22.3 36.2 50.2	1 58 29.47 + 0	20.21	. . .	.18	1 58 34.50	9.03	
	52		Weisse II, 120	52.7 5.3 18.1 30.6 43.3 55.0 8.2	2 8 30.46 — 0	0.25	. . .	— 15.18	2 8 15.03	+0 8.28	

DATE.	CLOCK. At 0h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Jan. 6	f 13.67	g. 0.011	—0.041	+0.295	0.000
11	15.05	.002	.185	.297	.000
14	15.18	.002	—0.229	+0.339	0.000

* H. Prof. Hubbard.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
Jan. 14	1	Weisse II, 159	..	..	37.5	50.1	2.2	14.6	27.8	2 11 2.44	— 0 12.83	. .	— 15.18	2 10 34.43	+0 8.25	H.
	2	Weisse II, 288	5.6	18.5	31.2	43.8	56.0	8.2	21.3	2 17 43.51	0.26	. .	.18	2 17 18.07	8.23	
	3	Weisse II, 442	8.8	21.1	34.0	46.3	59.0	11.8	24.1	2 26 46.44	0.27	. .	15.18	2 26 30.99	+0 8.11	
Mar. 25	4	Moon, 1st L.	24.8	38.2	51.6	4.7	17.8	30.8	44.4	8 8 4.61	+ 0 0.09	+ 63.89	24.57	8 8 44.02	. .	K.*
	5	λ Ursæ Minoris, S. P.	..	45.0	..	..	32.0	1.0	36.0	8 25 43.50	—10 11.54	. .	.57	8 15 7.39	—2 5.46	
	6	ε Hydræ	28.3	41.1	54.0	6.7	19.1	31.3	44.3	8 39 6.40	+ 0 0.12	. .	.57	8 38 41.95	+0 7.81	
	7	ι Ursæ Majoris	..	..	..	..	28.3	46.6	6.1	8 49 47.00	— 37.90	. .	.57	8 48 44.53	10.31	
	8	α Hydræ	52.3	5.2	17.7	30.4	43.0	55.3	8.4	9 20 30.33	+ 0.17	. .	.57	9 20 5.93	6.89	
	9	ε Leonis	54.5	8.7	22.5	36.2	49.7	3.1	17.2	9 37 35.99	.04	. .	.57	9 37 11.46	8.28	
31	10	α Canis Majoris	11.2	24.5	37.6	50.5	3.5	16.4	29.5	6 38 50.46	.02	. .	.93	6 38 25.55	7.02	B.†
	11	ε Canis Majoris	19.4	34.3	48.3	2.4	16.6	30.6	45.2	6 53 2.40	0.06	. .	.93	6 52 37.53	6.14	
	12	δ Geminorum	44.5	58.4	11.4	25.5	38.5	..	5.5	7 11 20.63	+ 4.45	. .	.93	7 11 0.15	9.44	
	13	β Geminorum	40.5	54.8	9.0	23.5	37.5	51.5	5.8	7 36 23.23	— 0.01	. .	.94	7 35 58.28	9.56	
	14	15 Argus	46.5	0.5	13.8	28.5	42.0	55.2	9.0	8 1 27.93	+ .06	. .	.94	8 1 3.05	6.21	
	15	ε Hydræ	29.2	41.5	54.5	7.4	19.2	31.5	44.5	8 39 6.83	.03	. .	.94	8 38 41.91	7.90	
	16	α Hydræ	52.5	5.5	18.5	31.0	43.5	55.5	8.8	9 20 30.76	.05	. .	.95	9 20 5.86	8.96	
	17	ε Leonis	55.0	8.8	22.5	36.5	50.6	3.8	17.5	9 37 36.39	+ 0.00	. .	.95	9 37 11.43	8.34	
	18	α Ursæ Majoris	..	49.0	15.0	42.0	10.0	36.5	5.0	10 54 56.25	— 13.84	. .	.97	10 54 17.44	8.63	
	19	δ Leonis	44.0	57.5	11.5	24.8	38.5	51.5	4.8	11 6 24.66	+ 0.01	. .	.97	11 5 59.70	7.50	
	20	β Leonis	3.5	16.5	29.5	42.3	55.0	8.0	21.0	11 41 42.26	.02	. .	.98	11 41 17.30	7.02	
	21	β Corvi	8.0	22.0	35.5	49.5	2.8	16.5	29.5	12 26 49.11	0.06	. .	.98	12 26 24.19	0 6.71	
	22	Polaris, S. P.	10.0	23.0	6.0	0.0	58.0	56.0	2.0	13 4 5.00	+ 7.24	. .	24.99	13 3 47.25	1 13.67	
	23	η Ursæ Majoris	58.5	18.5	37.5	58.0	17.5	36.5	56.2	13 41 57.53	— 0.11	. .	25.00	13 41 32.42	0 5.08	
	24	α Bootis	28.5	41.6	55.0	8.5	21.5	34.5	48.0	14 9 8.23	+ .01	. .	.00	14 8 43.24	5.95	
April 2	25	α Ursæ Majoris	21.0	48.5	16.0	43.2	10.0	36.0	4.4	10 54 42.73	— .36	. .	.57	10 54 16.80	8.67	
	26	δ Leonis	45.4	58.8	12.0	25.5	39.9	52.0	5.5	11 6 25.46	+ .01	. .	.57	11 5 59.90	7.51	
	27	δ Hydræ et Crateris	30.6	43.5	56.5	9.6	22.4	34.8	48.4	11 12 9.40	+ 0.11	. .	.57	11 11 43.94	6.62	
	28	Leonis (3955)	25.2	..	50.5	3.2	15.0	27.5	40.5	11 31 6.98	— 4.06	. .	.56	11 30 37.36	6.92	
	29	γ Ursæ Majoris	9.0	30.0	52.2	13.5	35.0	56.0	18.0	11 .6 13.39	— 0.23	. .	.56	11 45 47.60	7.19	
	30	Virginis (4080)	14.5	27.5	39.8	52.5	5.8	17.5	30.5	11 59 52.59	+ .09	. .	.55	11 59 27.13	6.84	
	31	γ Corvi	45.5	58.2	11.8	24.5	37.5	50.4	3.5	12 8 24.49	.11	. .	.55	12 7 59.05	6.71	
	32	Corvi (4173)	10.5	24.5	38.5	51.5	5.5	19.0	33.2	12 15 51.81	.13	. .	.55	12 15 26.39	6.86	
	33	β Corvi	9.0	22.5	36.4	49.5	3.4	16.4	30.3	12 26 49.64	0.13	. .	.55	12 26 24.22	0 6.71	
	34	Polaris, S. P.	12.0	18.0	6.0	59.0	49.0	50.0	58.0	13 4 1.71	10.63	. .	.54	13 3 46.80	1 13.64	
	35	α Bootis	28.5	42.2	55.5	8.6	22.0	35.0	48.5	14 9 8.61	+ 0.01	. .	.52	14 8 43.10	0 6.13	
	36	ε Bootis	3.5	17.5	31.6	45.8	59.5	13.5	28.5	14 38 45.70	— .02	. .	.51	14 38 20.21	+0 5.89	
	37	β Ursæ Minoris	18.0	6.0	54.0	42.0	29.5	15.5	5.0	14 51 41.43	— .83	. .	.51	14 51 15.09	—0 3.41	
	38	β Libræ	36.2	49.2	1.5	14.4	27.2	39.4	52.5	15 9 14.34	+ .10	. .	.50	15 8 48.94	+0 7.40	
	39	α Coronæ Borealis	57.5	11.4	26.2	40.0	54.0	8.0	22.2	15 28 39.90	— 0.02	. .	.50	15 28 14.38	+0 5.79	
	40	ζ Ursæ Minoris	2.0	5.0	6.0	8.0	8.0	8.0	11.0	15 50 6.86	— 1.13	. .	.49	15 49 40.24	—0 9.17	
	41	δ Ophiuchi	9.5	22.4	35.4	47.4	59.4	12.0	25.2	16 6 47.33	+ 0.09	. .	.49	16 6 21.93	+0 7.43	
	42	α Scorpii	48.0	1.5	15.5	30.2	43.5	57.2	12.0	16 20 29.84	+ .14	. .	.48	16 20 4.50	8.69	
3	43	ε Canis Majoris	19.5	34.5	49.2	3.2	17.2	31.0	45.5	6 53 2.87	— .05	. .	.25	6 52 37.57	6.18	B.
	44	δ Geminorum	44.5	58.5	12.0	25.8	39.2	52.2	16.2	7 11 25.49	.05	. .	.24	7 11 0.20	9.47	
	45	α Canis Minoris	6.2	19.0	31.5	44.4	56.5	8.5	21.5	7 31 43.94	.04	. .	.24	7 31 18.66	8.06	
	46	β Geminorum	41.5	55.0	9.5	23.5	37.5	52.1	6.5	7 36 23.66	— 0.06	. .	.24	7 35 58.36	+0 9.53	
	47	λ Ursæ Minoris, S. P.	..	..	5.0	26.5	49.5	..	..	8 15 27.00	+ 12.88	. .	.57	8 15 14.31	—2 12.48	K.
	48	ε Hydræ	29.3	42.2	54.9	7.5	20.0	32.3	45.2	8 39 7.34	— 0.04	. .	.57	8 38 41.73	+0 7.93	
4	49	α Canis Minoris	5.5	18.2	31.2	44.0	56.0	8.5	21.5	7 31 43.56	+ 0.19	. .	.07	7 31 18.68	+0 8.17	B.
	50	λ Ursæ Minoris, S. P.	9.0	55.0	1.0	20.0	45.0	17.0	55.0	8 15 28.14	12.32	. .	.07	8 15 15.39	—2 15.90	
	51	Hydræ (3184)	12.5	25.3	38.4	51.5	3.4	15.9	29.0	9 12 50.86	0.22	. .	.06	9 12 26.02	+0 7.16	
	52	α Hydræ	52.6	5.5	18.3	30.9	43.5	55.5	8.5	9 20 30.69	+ 0 0.22	. .	— 25.06	9 20 5.76	+0 7.10	

March 31. Stars very unsteady.

K. Prof. Keith.
B. Prof. Beecher.

B = K —0s.35.

DATE.	CLOCK. At 9h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
March 25	f 24.57	g .005	+0.267	—0.198	—0.121
31	24.95	g .011	.160	.065	.121
April 2	25.60	l .016	.190	.153	.121
3	25.21	.016	.083	.013	.121
4	25.06	l .007	+0.320	—0.120	—0.121

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
April 4	1	ε Leonis	55.2	8.9	22.5	36.5	50.2	3.2	17.5	9 37 36.29	+ 0 0.13	. .	— 25.05	9 37 11.37	+0 8.39	B.
	2	α Leonis	1.5	14.2	27.3	40.0	52.9	5.2	18.5	10 0 39.94	.17	. .	.05	10 0 15.06	7.68	
	3	Sextantis (3563)	54.6	7.4	19.9	32.6	45.0	57.4	10.5	10 18 32.49	.19	. .	.05	10 18 7 63	8.70	
	4	δ Leonis	44.5	58.1	11.2	24.8	38.2	51.2	4.8	11 6 24.60	.15	. .	.04	11 5 59.71	7.52	
	5	Leonis (3901)	54.5	6.6	19.2	32.2	44.4	56.5	9.3	11 20 31.82	.20	. .	.04	11 20 6.98	6.97	
	6	Leonis (3955)	24.5	37.2	49.2	1.4	14.1	26.2	39.2	11 31 1.69	.20	. .	.03	11 30 36.86	6.95	
	7	β Leonis	3.3	16.4	29.2	42.4	55.2	7.6	20.8	11 41 42.13	0.17	. .	.03	11 41 17.27	0 7.03	
	8	Polaris, S. P.	12.0	21.0	7.0	59.0	56.0	59.0	5.0	13 4 5.57	+ 9.49	. .	.03	13 3 50.03	1 13.45	
6	9	ε Leonis	..	..	..	..	50.6	..	18.1	9 38 4.35	— 27.40	. .	.70	9 37 11.25	0 8.42	K.
	10	δ Leonis	44.8	58.7	12.2	25.7	38.9	52.1	6.2	11 6 25.51	+ 0.12	. .	.70	11 5 59.93	7.54	
	11	δ Hydræ et Crateris	30.8	43.7	56.7	9.4	22.3	35.0	48.2	11 12 9.44	+ 0.16	. .	.70	11 11 43.90	6.65	
	12	β Corvi	..	22.5	36.2	49.8	3.3	16.6	30.6	12 26 56.50	— 6.64	. .	.70	12 26 24.16	0 6.72	
7	13	Polaris	19.0	20.0	21.0	20.0	15.0	55.0	9.0	1 4 14.14	— 5.21	. .	.22	1 3 43.71	1 13.17	B.
	14	α Canis Majoris	11.2	24.2	37.4	50.4	3.5	16.4	29.6	6 38 50.39	+ 0.16	. .	.24	6 38 25.31	0 7.16	
	15	ε Canis Majoris	19.5	34.4	48.5	2.8	16.8	30.8	45.6	6 53 2.63	+ 0.15	. .	.24	6 52 37.54	6.30	
	16	δ Geminorum	44.4	..	11.5	25.3	38.6	51.8	5.5	7 11 29.52	— 4.36	. .	.24	7 10 59.92	9.58	
	17	α Canis Minoris	5.6	18.5	31.2	43.6	56.2	8.8	21.4	7 31 43.61	+ 0.15	. .	.24	7 31 18.52	8.23	
	18	β Geminorum	40.5	54.6	9.2	23.3	37.6	51.8	5.9	7 36 23.27	+ 0 0.12	. .	.24	7 35 58.15	+0 9.70	
	19	λ Ursæ Minoris, S. P.	20.0	4.0	4.0	28.0	52.0	..	50.0	8 12 6.33	3 35.58	. .	.24	8 15 17.67	—2 18.53	
	20	α Hydræ	53.0	5.9	18.2	31.1	43.1	55.9	9.1	9 20 30.90	0 0.16	. .	.24	9 20 5.82	+0 7.06	
	21	ρ Leonis	33.5	46.4	59.5	12.2	24.8	37.2	50.2	10 25 11.97	.15	. .	.25	10 24 45.87	7.51	
	22	Sextantis, (3684)	5.2	18.5	31.5	43.5	55.8	8.2	21.5	10 37 43.46	+ .16	. .	.25	10 37 18.37	7.22	
	23	α Ursæ Majoris	20.5	48.0	15.5	42.6	9.6	36.0	4.0	10 54 42.32	— 0.03	. .	.25	10 54 17.10	0 8.78	
	24	Polaris, S. P.	10.0	17.0	6.0	1.0	55.0	53.0	55.0	13 4 2.43	+ 5.75	. .	.26	13 3 42.92	1 13.13	
	25	Polaris	..	20.0	24.0	17.0	13.0	59.0	..	1 4 14.60	— 6.12	. .	.30	1 3 43.18	1 13.09	
9	26	α Canis Majoris	10.8	24.2	37.5	50.4	3.3	15.8	29.4	6 38 50.20	+ 0.15	. .	.15	6 38 25.20	0 7.20	
	27	δ Geminorum	44.3	58.9	12.2	25.4	38.5	51.5	5.4	7 11 25.17	.11	. .	.15	7 11 0.13	9.62	
	28	a^2 Geminorum	31.0	46.8	1.2	16.1	31.1	45.2	0.3	7 25 15.96	.08	. .	.15	7 24 50.89	10.22	
	29	α Canis Minoris	5.4	18.5	31.2	43.5	56.2	8.3	21.4	7 31 43.50	.14	. .	.15	7 31 18.49	8.26	
	30	15 Argus	47.1	0.8	14.5	28.2	41.6	55.1	8.9	8 1 28.03	.15	. .	.15	8 1 3.03	6.39	
	31	ε Hydræ	29.2	41.6	54.0	7.2	19.2	31.5	44.4	8 39 6.73	.13	. .	.15	8 38 41.71	8.03	
	32	12 Canum Venaticorum	30.9	47.1	3.5	20.1	35.8	51.3	8.0	12 49 19.53	0 0.06	. .	.67	12 48 53.92	0 6.27	K.
	33	Polaris, S. P.	9.0	..	11.0	4.0	56.0	..	..	12 58 5.00	6 8.44	. .	.67	13 3 47.77	1 13.06	
	34	α Virginis	57.9	10.8	23.7	36.5	49.1	1.4	14.3	13 17 36.24	0 0.15	. .	.67	13 17 10.72	0 6.91	
	35	η Ursæ Majoris	59.1	19.0	39.0	58.6	17.7	37.2	56.9	13 41 58.21	.01	. .	.67	13 41 32.55	4.92	
10	36	ι Ursæ Majoris	12.5	31.2	50.0	9.3	28.0	46.0	5.0	8 49 8.86	+ .06	. .	.10	8 48 43.82	10.69	B.
	37	α Hydræ	52.8	5.5	18.2	31.5	43.5	56.0	9.5	9 20 31.00	— .01	. .	.10	9 20 5.89	7.10	
	38	ε Leonis	55.0	9.0	22.5	36.2	49.5	33.5	17.5	9 37 36.17	+ .04	. .	.10	9 37 11.11	8.48	
	39	α Leonis	1.2	14.5	27.4	40.0	52.5	5.2	18.4	10 0 39.89	+ 0.03	. .	.10	10 0 14.82	7.74	
	40	α Ursæ Majoris	..	48.0	15.5	42.0	8.4	35.5	3.0	10 54 55.40	— 13.57	. .	.10	10 54 16.73	8.83	
	41	δ Leonis	44.5	58.2	12.2	25.0	38.4	51.4	5.4	11 6 25.91	+ 0.04	. .	.10	11 5 59.95	7.56	
	42	δ Hydræ et Crateris	30.4	43.2	56.1	9.1	22.2	34.5	48.2	11 12 9.10	— 0 0.02	. .	.10	11 11 43.98	+0 6.67	
11	43	λ Ursæ Minoris, S. P.	..	12.0	23.0	40.0	4.0	31.0	14.0	8 21 0.66	5 11.43	. .	.15	8 15 24.08	—2 23.67	
	44	α Hydræ	53.0	5.6	18.5	31.5	43.5	56.0	8.8	9 20 30.99	— 0 0.01	. .	.15	9 20 5.83	+0 7.11	
	45	ε Leonis	55.2	9.4	22.5	36.5	49.8	3.5	17.4	9 37 36.33	+ 0.04	. .	.15	9 37 11.22	8.49	
	46	α Leonis	..	14.4	27.2	40.4	53.0	5.2	18.5	10 0 46.45	— 0 6.41	. .	.15	10 0 14.89	0 7.75	
	47	Polaris	..	..	21.0	18.0	9.0	53.0	6.0	1 12 9.40	— 7 57.90	. .	.18	1 3 46.32	1 12 99	
12	48	α Canis Majoris	10.0	24.3	37.5	50.8	4.5	16.4	30.4	6 38 50.70	+ 0 0.08	. .	.61	6 38 25.17	0 7.24	
	49	a^2 Geminorum	31.5	47.4	..	..	..	..	..	7 24 39.45	47.11	. .	.63	7 24 50.93	10.29	
13	50	a^2 Geminorum	32.4	47.2	2.3	16.5	31.5	46.0	1.2	7 25 16.73	0.08	. .	.91	7 24 50.90	10.31	
	51	α Canis Minoris	6.5	19.3	32.1	44.3	57.0	9.2	22.2	7 31 44.37	.09	. .	.91	7 31 18.55	8.33	
	52	β Geminorum	41.1	55.3	9.5	24.0	38.2	51.5	6.5	7 36 23.73	+ 0 0.08	. .	+ 25.91	7 35 57.90	+0 9.82	

DATE.	CLOCK. At 9h.		Hourly Rate.	VALUE OF m.	n.	c.
	s.		s.	s.	s.	s.
April 6	f 25.70	g	.002	+0.277	—0.023	—0.121
7	25.24	g	.003	.277	.023	.121
9 B.	25.15	l	.002	.260	.055	.121
9 K.	25.67		.000	.260	—0.055	.121
10	25.10		.002	.135	+0.102	.121
11	25.15	l	.002	.134	.102	.121
12	f 25.66	g	.022	+0.210	+0.016	—0.121

April 7. Stars unsteady.
11. Stars very unsteady.

TE. 47.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
1 13	1	λ Ursæ Minoris, S. P.	..	..	20.7	37.0	57.0	30.0	57.3	8 26 4.40	—10 16.06	. . .	— 25.91	8 15 22.43	—2 25.74	B
	2	δ Leonis	45.3	59.1	12.7	26.1	39.5	52.6	6.3	11 6 25.94	+ 0 0.09	. . .	26.11	11 5 59.92	+0 7.59	K
	3	δ Hydræ et Crateris	31.1	44.3	57.2	10	22.9	55.5	48.7	11 12 9.96	.08	. . .	.11	11 11 43.93	6.69	
	4	γ Ursæ Majoris	8.8	30.3	52.7	14.1	35.4	56.3	18.2	11 46 13.69	+ 0 0.02	. . .	.11	11 45 47.60	0 7.30	K
	5	Polaris	..	..	21.6	18.0	13.0	55.3	1.0	1 12 9.78	— 8 1.02	. . .	.02	1 3 42.74	1 12.75	B.
14	6	ε Hydræ	29.4	42.5	55.3	7.5	20.5	32.5	45.5	8 39 7.60	+ 0 0.13	. . .	.07	8 38 41.66	0 8.11	
	7	α Hydræ	53.5	6.2	19.2	32.2	44.5	56.5	9.5	9 20 31.66	.15	. . .	.07	9 20 5.74	7.16	
	8	ε Leonis	55.5	9.8	23.5	27.2	50.5	4.3	18.4	9 37 37.03	.11	. . .	.07	9 37 11.07	8.54	
	9	α Leonis	2.4	15.4	28.7	41.2	53.5	6.5	13.2	10 0 40.99	.13	. . .	.07	10 0 15.05	7.79	
	10	Carinæ (3550)	28.5	41.5	54.2	6.5	18.5	31.2	43.5	10 16 6.27	.14	. . .	.07	10 15 40.34	7.30	
	11	Sextantis (3603)	9.3	22.4	35.2	47.4	0.0	12.4	25.4	10 23 47.44	.15	. . .	.08	10 23 21.51	7.00	
	12	Leonis (3649)	31.5	44.4	56.4	9.3	21.5	34.4	47.2	10 32 9.24	+ .13	. . .	.08	10 31 43.29	7.48	
	13	α Ursæ Majoris	20.5	48.4	15.5	43.0	10.0	36.0	6.5	10 54 42.84	— 0 0.08	. . .	.08	10 54 16.68	0 8.94	
	†14	Polaris, S. P.	17.0	24.0	10.0	1.0	59.0	..	3.0	13 1 29.00	+ 2 45.66	. . .	.09	13 3 47.97	1 12.65	
	15	η Ursæ Majoris	0.0	20.0	39.5	58.5	18.4	37.3	57.4	13 41 58.73	0 0.02	. . .	.10	13 41 32.65	0 4.88	
	16	α Bootis	29.0	42.5	55.5	9.5	22.5	35.5	49.0	14 9 9.07	0.12	. . .	.10	14 8 43.09	5.99	
	17	ε Bootis	3.4	18.2	32.8	..	..	14.2	29.3	14 38 43.58	+ 2.98	. . .	.10	14 38 20.46	+ 5.71	
	18	β Ursæ Minoris	18.5	7.0	55.0	43.0	30.2	16.5	5.0	14 51 42.17	— 0 0.36	. . .	26.10	14 51 15.72	—0 3.83	
15	19	Polaris	17.0	23.0	24.0	19.0	10.0	..	4.0	1 1 36.17	+ 2 38.49	. . .	25.99	1 3 48.67	+1 12.26	
16	20	α Canis Majoris	11.8	25.4	38.3	51.5	4.3	16.8	30.3	6 38 51.20	— 0 0.08	. . .	.99	6 38 25.13	0 7.32	
	21	δ Geminorum	45.3	59.2	12.5	..	38.5	52.5	6.5	7 11 25.75	+ .06	. . .	.99	7 10 59.82	9.74	
	22	a^2 Geminorum	32.2	47.3	2.3	16.5	31.5	46.2	1.4	7 25 16.77	+ .05	. . .	.99	7 24 50.83	10.36	
	23	α Canis Minoris	6.5	19.4	32.0	44.5	57.2	9.5	22.1	7 31 44.46	— .02	. . .	.99	7 31 18.45	8.38	
	24	β Geminorum	41.2	55.5	9.7	24.0	38.3	52.2	6.4	7 36 23.90	+ 0.04	. . .	.99	7 35 57.87	9.88	
	25	15 Argus	48.1	1.4	..	29.4	42.5	56.2	9.8	8 1 31.23	— 2.36	. . .	.99	8 1 2.88	6.53	
	26	ε Hydræ	29.5	42.4	55.2	7.5	20.3	32.3	45.4	8 39 7.51	— 0.01	. . .	25.99	8 38 41.51	8.14	
20	27	δ Ursæ Majoris	11.5	31.2	50.2	8.8	27.5	45.8	5.5	8 49 8.64	+ .01	. . .	24.93	8 48 43.72	10.95	
	28	α Hydræ	52.3	5.5	18.4	31.2	43.0	55.5	8.3	9 20 30.60	.00	. . .	.91	9 20 5.69	7.25	
	29	ε Leonis	54.5	8.3	22.3	36.2	49.5	3.2	16.3	9 37 35.76	.03	. . .	.90	9 37 10.89	8.64	B.
	†30	α Leonis	1.3	14.5	27.3	40.1	52.8	5.3	18.6	10 0 39.99	.02	. . .	.88	10 0 14.77	7.88	K
	31	δ Leonis	44.0	57.5	11.2	24.8	38.2	51.1	5.0	11 6 24.54	.03	. . .	.84	11 5 59.72	7.65	B.
	32	β Leonis	3.2	16.0	29.1	42.3	55.2	7.5	21.0	11 41 42.04	+ 0.03	. . .	.81	11 41 17.26	7.12	
	33	γ Ursæ Majoris	7.0	..	51.0	12.5	34.4	55.0	17.4	11 46 19.55	— 7.23	. . .	.81	11 45 47.51	7.40	
	34	β Corvi	8.5	22.0	35.5	49.5	2.4	15.0	29.5	12 26 48.91	0.01	. . .	.78	12 26 24.12	0 6.70	
	35	Polaris S. P.	22.0	27.0	15.0	8.0	4.0	1.0	4.0	13 4 11.57	— 2.76	. . .	.75	13 3 49.58	1 10.93	
	36	η Ursæ Majoris	58.4	18.0	38.0	57.5	17.0	36.0	56.4	13 41 57.33	+ 0.01	. . .	24.72	13 41 32.62	0 4.86	
21	†37	α Hydræ	51.5	4.4	17.2	29.5	42.2	54.4	7.3	9 20 29.50	0 0.07	. . .	23.66	9 20 5.77	0 7.26	B.
	38	Polaris, S. P.	20.0	..	..	5.5	3.5	2.0	6.5	13 8 55.50	— 4 41.42	. . .	.85	13 3 50.23	1 10.68	K.
	39	α Virginis	56.2	9.3	22.1	..	47.4	59.8	12.7	13 17 34.58	+ 0 0.11	. . .	.85	13 17 10.84	0 6.89	
	40	η Ursæ Majoris	..	..	36.9	56.5	15.9	35.0	54.8	13 42 15.82	— 19.45	. . .	.83	13 41 32.54	5.06	
	41	η Bootis	..	..	..	50.0	3.2	16.0	29.6	13 48 9.70	— 19.76	. . .	.83	13 47 26.11	6.30	
	42	α Bootis	26.8	40.3	53.7	7.2	20.3	33.3	46.9	14 9 6.93	+ 0 0.09	. . .	.83	14 8 43.19	0 5.94	K.
	†43	Polaris	16.0	24.0	..	19.0	10.0	..	..	+0 56 17.25	+ 7 52.81	. . .	23.33	1 3 47.09	1 10.54	B.
22	44	Moon, 1st L.	13.2	27.0	40.5	53.5	6.5	19.2	32.6	8 39 53.21	0 0.43	+ 63.51	22.47	8 40 34.68	. .	
	45	ε Leonis	51.5	5.4	19.4	33.2	46.7	0.2	14.2	9 37 32.94	.43	. . .	.41	9 37 10.96	0 8.67	
	46	α Leonis	58.2	11.1	24.0	36.8	49.6	2.2	15.2	10 0 36.74	0.43	. . .	.39	10 0 14.78	7.91	
	47	δ Leonis	41.2	55.1	8.3	20.9	..	..	..	11 6 1.37	20.52	. . .	.32	11 5 59.57	7.67	
	48	δ Hydræ et Crateris	27.3	40.2	52.8	..	18.5	31.4	44.5	11 12 5.78	0.48	. . .	.31	11 11 43.95	6.76	
	49	β Leonis	59.8	13.2	26.2	39.3	51.8	4.5	17.9	11 42 38.96	.43	. . .	.28	11 42 17.11	7.13	
	50	γ Ursæ Majoris	4.4	26.5	48.6	9.5	31.2	52.0	14.0	11 46 9.46	+ 0.46	. . .	.28	11 45 47.64	0 7.43	
	51	Polaris, S. P.	23.0	33.5	17.0	..	5.0	5.5	10.0	13 4 15.67	— 3.14	. . .	.20	13 3 50.33	1 10.47	
	52	η Ursæ Majoris	55 5	15.5	34.8	54.5	13.6	33.2	52.8	13 41 54.27	+ 0 0.45	. . .	— 22.16	13 41 32.56	+0 4.86	

April 10, 10h. Adjusted middle wire vertical.

14. Flying clouds.

30, 37, 43. Corrected for B. = K.—0s.36.

DATE.	CLOCK. At 11h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
April 13	f 25.95	g 0.012	+0.210	+0.016	—0.121
14	26.08	l 0.006	.263	—0.045	.121
16	25.99	.002	.092	+0.050	.121
20	24.84	.043	.135	.052	.121
21	23.95	.043	.202	+0.050	—0.121
22	f 22.33	l 0.060	+0.330	—0.041	+0.106

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
April 22	1	α Bootis	25.0	38.6	52.0	5.2	18.3	31.3	45.1	14 9 5.07	+ 0 0.43	. .	— 22.14	14 8 43.36	+0 5.94	B.
24	2	β Corvi	..	18.3	32.0	45.4	58.9	12.0	26.3	12 26 52.15	— 0 6.66	. .	21.33	12 26 24.16	0 6.71	K.
	3	Polaris, S. P.	..	..	..	10.0	4.0	10.0	11.0	13 16 8.75	—11 56.74	. .	.32	13 3 50.69	1 10.02	
	4	α Virginis	53.8	6.6	19.4	32.2	45.0	57.0	10.3	13 17 32.04	+ 0 0.16	. .	.32	13 17 10.88	0 6.86	
	5	η Ursæ Majoris	54.8	14.8	34.1	53.5	12.8	32.0	52.1	13 41 53.44	.32	. .	.32	13 41 32.44	4.87	
	6	η Bootis	7.1	21.1	44.0	47.3	0.5	13.4	27.4	13 47 47.26	.22	. .	.32	13 47 26.16	6.29	
	7	α Bootis	24.3	38.2	51.2	4.6	17.8	30.7	44.6	14 9 4.49	.22	. .	21.31	14 8 43.40	5.93	
25	8	ε Hydræ	23.8	36.7	49.5	2.2	14.5	26.8	39.5	8 39 1.86	.26	. .	20.72	8 38 41.40	8.29	B.
	9	α Hydræ	48.1	1.1	13.8	26.3	38.8	51.1	3.9	9 20 26.16	0.24	. .	.71	9 20 5.69	7.32	
	10	α Leonis	56.5	9.5	22.3	35.1	..	0.5	13.4	10 0 32.88	2.41	. .	.70	10 0 14.59	7.95	
	11	Moon, 1st L.	10.4	23.5	36.5	49.5	1.8	14.5	27.4	11 2 49.09	0.25	+ 60.90	.69	11 3 29.55	. .	
	12	β Leonis	58.6	11.6	24.5	37.5	50.7	3.5	16.6	11 41 37.57	.26	. .	.68	11 41 17.15	7.15	
	13	γ Ursæ Majoris	2.9	25.0	46.5	8.6	29.8	50.5	12.6	11 46 7.99	0 0.30	. .	.68	11 45 47.61	0 7.49	
	14	Polaris, S. P.	22.0	32.0	15.0	7.0	..	..	4.0	12 59 28.00	4 43.55	. .	.66	13 3 50.89	1 9.87	
	15	η Ursæ Majoris	54.0	14.0	33.5	53.0	12.6	..	51.5	13 41 46.43	0 6.71	. .	.66	13 41 32.48	0 4.87	
	16	η Bootis	6.8	20.2	33.2	46.8	59.8	13.2	27.5	13 47 46.79	0.26	. .	.65	13 47 26.40	6.29	
	17	α Bootis	23.4	37.3	50.6	3.8	16.5	29.9	43.4	14 9 3.56	.26	. .	.65	14 8 43.17	5.92	
26	18	α Hydræ	47.4	0.6	12.9	25.5	38.2	50.5	3.5	9 20.25.51	.20	. .	.08	9 20 5.63	7.34	
	19	ε Leonis	49.3	3.6	17.2	31.2	44.7	57.8	11.9	9 37 30.81	.25	. .	.07	9 37 10.99	8.73	
	20	α Leonis	56.1	9.2	21.9	34.6	47.5	59.5	13.4	10 0 34.60	.23	. .	.06	10 0 14.77	7.96	
	21	δ Hydræ et Crateris	24.3	37.6	50.5	..	16.5	28.9	42.4	11 12 3.37	.22	. .	20.03	11 11 43.56	6.80	
	22	β Corvi	3.4	17.2	30.5	43.9	57.5	11.1	24.5	12 26 44.01	+ 0.18	. .	19.99	12 26 24.20	0 7.02	
	23	Polaris, S. P.	22.5	33.0	15.0	9.0	6.0	5.0	10.0	13 4 14.36	— 2.94	. .	.97	13 3 51.45	1 9.53	
	24	η Ursæ Majoris	53.5	13.5	33.8	52.5	11.8	31.2	50.3	13 41 52.37	+ 0.31	. .	.95	13 41 32.73	0 4.87	
	25	η Bootis	6.2	18.9	32.5	46.4	59.3	11.9	25.4	13 47 45.80	.24	. .	.95	13 47 26.09	6.29	
	26	α Bootis	22.8	36.4	49.8	2.9	16.1	29.0	42.6	14 9 2.80	.24	. .	.94	14 8 43.10	5.92	
	27	β Libræ	31.2	43.8	56.5	8.8	21.5	34.2	46.8	15 9 8.97	.20	. .	.91	15 8 49.26	7.01	
27	28	δ Leonis	38.8	52.3	5.8	19.4	32.3	45.4	59.4	11 6 19.06	.24	. .	.99	11 5 59.61	7.73	
	29	β Leonis	57.5	10.6	23.4	36.5	49.4	2.4	15.5	11 41 36.47	.24	. .	.64	11 41 17.07	7.17	
	30	η Ursæ Majoris	53.2	13.0	32.5	52.3	11.2	30.4	50.3	13 41 51.84	.31	. .	.60	13 41 32.55	4.87	
	31	η Bootis	5.8	19.3	32.8	45.8	59.0	11.3	25.4	13 47 45.63	.24	. .	19.60	13 47 26.27	6.29	
May 1	32	α Leonis	56.3	8.9	22.1	35.1	47.3	0.1	13.4	10 0 34.74	.26	. .	20.50	10 0 14.50	8.03	
	33	α Ursæ Majoris	14.5	42.0	9.0	36.5	3.0	30.0	59.5	10 54 26.36	.60	. .	.48	10 54 16.48	9.46	
	34	δ Hydræ et Crateris	25.3	38.5	51.4	4.5	17.2	29.5	42.5	11 12 4.13	.16	. .	.47	11 11 43.82	6.85	
	35	β Leonis	58.3	11.4	24.5	37.2	50.3	2.4	16.2	11 41 37.19	.27	. .	.46	11 41 17.00	7.20	
	36	γ Ursæ Majoris	2.5	24.5	46.0	7.5	29.5	49.8	12.2	11 46 7.43	.50	. .	.46	11 45 47.47	7.59	
	37	η Ursæ Majoris	54.0	13.5	33.5	53.0	12.0	31.5	51.0	13 41 52.64	.45	. .	.41	13 41 32.68	4.88	
	38	α Bootis	23.4	37.5	50.5	3.0	16.5	29.5	43.5	14 9 3.41	+ 0.28	. .	20.40	14 8 43.29	0 5.90	
3	39	Polaris, S. P.	32.0	42.0	23.0	11.0	11.0	11.0	15.0	13 4 20.71	— 7.49	. .	19.34	13 3 53.88	1 6.37	
	40	α Virginis	51.8	4.6	17.5	..	42.4	55.3	8.4	13 17 30.00	+ 0.20	. .	.34	13 17 10.86	0 6.85	
	41	η Ursæ Majoris	52.5	11.8	31.5	51.5	11.0	30.5	50.5	13 41 51.33	.45	. .	.33	13 41 32.45	4.89	
	42	η Bootis	5.5	19.1	32.2	45.5	58.5	11.5	25.3	13 47 45.37	.28	. .	.33	13 47 26.32	6.27	
	43	α Bootis	21.8	35.8	49.3	2.5	15.6	28.5	42.5	14 9 2.29	.28	. .	.32	14 8 43.25	5.90	
	44	ε Bootis	56.8	11.4	25.9	40.2	53.2	7.5	22.2	14 38 39.60	.32	. .	.32	14 38 20.60	+0 5.57	
	45	β Ursæ Minoris	10.5	58.5	47.0	35.0	22.0	8.5	56.9	14 51 34.06	.94	. .	19.31	14 51 15.69	—0 4.06	
4	46	α Serpentis	27.0	39.8	52.7	5.3	17.6	30.0	43.0	15 37 5.06	.24	. .	18.71	15 36 46.59	+0 6.36	K.
	47	β^1 Scorpii	14.4	27.8	41.1	54.6	7.7	20.8	34.2	15 56 54.37	.14	. .	.71	15 56 35.80	7.52	
	48	δ Ophiuchi	3.0	15.8	28.6	41.0	53.4	5.6	18.5	16 6 40.84	.20	. .	18.71	16 6 22.33	6.82	
5	49	ε Leonis	46.5	0.5	14.4	28.3	41.8	55.1	9.3	9 37 27.99	.14	. .	17.24	9 37 10.89	8.88	B.
	50	α Ursæ Majoris	11.0	38.0	5.5	32.5	59.6	25.9	54.2	10 54 32.39	.41	. .	.20	10 54 15.60	9.59	
	51	δ Leonis	35.8	49.9	3.5	16.4	30.4	43.2	57.3	11 6 16.64	.12	. .	.19	11 5 59.57	7.82	
	52	δ Leonis	21.4	34.9	48.4	1.4	13.5	26.2	39.3	11 11 0.73	+ 0 0.01	. .	— 17.18	11 10 43.56	+0 6.89	

DATE.	CLOCK. At 13h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
April 24	f 21.32	l .013	+0.179	+0.119	0.000
25	20.66	.013	.250	—0.035	0.000
26	19.98	.028	.211	+0.083	0.000
27	19.62	.015	.211	+0.083	0.000
May 1	20.43	.023	.210	+0.200	0.000
3	19.35	.023	.210	+0.200	0.000
4	f 18.74	l .010	+0.210	+0.200	0.000

April 24. Stars very unsteady.
May 1. Stars very unsteady.
May 4. Stars unsteady.

ATE. 847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
y 5	1	β Leonis	54.4	7.9	21.2	34.2	47.1	59.8	13.2	11 41 33.97	+ 0 0.10	. . .	— 17.18	11 41 16.89	+0 7.24	B.
	2	β Corvi	0.5	14.4	27.9	51.2	54.9	8.5	22.3	12 26 41.39	— 0.02	. . .	.16	12 26 24.21	0 6.77	
	3	Polaris, S. P.	31.0	39.0	19.0	15.0	10.0	8.0	13.0	13 4 19.29	— 6.78	. . .	.14	13 3 55.37	1 5.44	
	4	α Virginis	49.2	2.4	15.4	28.4	41.5	53.4	6.5	13 17 28.11	+ 0.03	. . .	.14	13 17 11.00	0 6.85	
	5	η Ursæ Majoris	51.0	10.8	30.2	49.6	9.0	27.4	48.3	13 41 49.47	.27	. . .	.12	13 41 32.62	4.91	
	6	η Bootis	3.4	16.5	29.4	..	56.4	9.3	23.4	13 47 43.07	.15	. . .	.12	13 47 26.10	6.27	
	7	α Bootis	20.2	34.0	47.3	0.5	13.5	26.5	40.4	14 9 0.34	+ .12	. . .	.11	14 8 43.38	5.89	
	8	α Scorpii	40.3	54.2	8.5	22.6	35.4	49.5	4.3	16 20 22.11	— .03	. . .	17.06	16 20 5.02	7.93	
6	9	ε Leonis	45.7	59.5	13.8	27.4	41.1	54.5	8.5	9 37 27.20	+ .14	. . .	16.59	9 37 10.75	8.89	
	10	α Leonis	52.4	5.6	18.4	31.4	44.2	56.4	9.4	10 0 31.11	.10	. . .	.58	10 0 14.64	8.10	
	11	α Ursæ Majoris	9.2	37.6	5.2	32.8	59.5	25.8	53.5	10 54 31.94	.41	. . .	.56	10 54 15.79	9.63	
	12	δ Leonis	35.1	49.1	2.5	16.4	29.8	42.5	56.5	11 6 15.99	.13	. . .	.55	11 5 59.57	7.84	
	13	δ Hydræ et Crateris	21.5	34.5	47.5	0.5	13.5	25.8	39.3	11 12 0.36	.01	. . .	.55	11 11 43.82	6.90	
	14	β Leonis	54.0	7.5	20.8	33.4	46.4	59.2	12.6	11 41 33.41	.10	. . .	16.54	11 41 16.97	7.25	
7	15	β Libræ	29.5	41.8	54.4	7.4	20.2	32.3	45.4	15 9 7.29	.08	. . .	17.93	15 8 49.44	6.90	
	16	α Coronæ Borealis	50.1	4.3	18.5	33.2	46.5	0.4	14.5	15 28 32.50	.22	. . .	.94	15 28 14.78	5.26	
	17	α Serpentis	26.4	39.0	51.8	4.6	16.8	29.6	42.4	15 37 4.37	.12	. . .	.95	15 36 46.54	6.33	
	18	β¹ Scorpii	13.8	27.6	40.2	53.8	7.2	19.7	33.5	15 56 53.69	.08	. . .	.97	15 56 35.80	7.48	
	19	δ Ophiuchi	2.5	15.5	27.6	40.6	52.5	4.8	18.2	16 6 40.24	.12	. . .	.98	12 6 22.38	6.78	
	20	α Scorpii	41.2	55.8	8.8	23.2	36.8	50.8	4.8	16 20 23.06	.06	. . .	17.99	16 20 5.13	7.90	
	21	α Herculis	21.5	34.6	47.8	0.5	13.5	25.8	39.5	17 8 0.46	.18	. . .	18.03	17 7 42.61	5.87	
10	22	η Bootis	30.7	44.1	57.4	10.8	23.9	36.6	50.5	13 48 10.57	.19	. . .	44.53	13 47 26.23	6.27	
	23	α Bootis	47.9	0.9	14.5	27.4	40.9	53.9	7.6	14 9 27.59	+ 0.19	. . .	.57	14 8 43.21	5.88	
	24	ε Bootis	..	..	..	5.5	19.6	33.1	47.5	14 39 26.42	— 20.96	. . .	44.63	14 38 20.83	5.53	
11	25	α Ursæ Majoris	41.0	8.5	35.7	2.8	30.6	56.4	24.0	10 55 2.71	+ 0.44	. . .	47.11	10 54 16.04	9.80	
	26	γ Ursæ Majoris	29.0	51.0	12.5	34.4	56.0	16.5	37.2	11 46 33.80	.38	. . .	.22	11 45 46.96	7.82	
	27	β Corvi	30.6	44.5	57.9	11.5	25.2	38.1	51.8	12 27 11.37	+ 0.07	. . .	47.30	12 26 24.14	0 6.80	
13	28	Polaris, S. P.	36.0	42.0	34.0	21.0	16.0	15.0	20.0	13 4 26.29	— 5.90	. . .	20.81	13 3 59.58	1 1.63	
	29	α Virginis	53.5	6.4	19.2	31.9	44.5	56.8	9.9	13 17 31.74	+ 0.11	. . .	.82	13 17 11.03	0 6.87	
	30	η Ursæ Majoris	54.0	13.5	33.5	53.0	12.6	31.8	51.5	13 41 52.84	+ .32	. . .	20.85	13 41 32.31	4.96	
15	31	α Virginis	57.0	9.5	22.5	35.3	48.1	0.5	13.4	13 17 35.19	— .04	. . .	24.28	13 17 10.87	6.87	
	32	η Ursæ Majoris	57.0	17.8	37.4	57.0	16.5	35.0	55.0	13 41 56.53	+ .38	. . .	.31	13 41 32.60	4.98	
	33	η Bootis	10.6	24.0	36.8	50.5	3.4	16.4	30.2	13 47 50.27	.12	. . .	.32	13 47 26.07	6.28	
	34	α Bootis	26.5	40.5	54.4	7.8	20.6	33.8	47.8	14 9 7.34	+ 0.13	. . .	.34	14 8 43.13	5.88	
	35	ε Bootis	2.2	16.8	..	45.0	58.9	13.5	27.2	14 38 47.27	— 2.15	. . .	24.38	14 38 20.74	5.53	
16	36	α Virginis	57.8	11.3	23.8	36.5	49.2	1.5	15.0	13 17 36.44	— 0.04	. . .	25.58	13 17 10.82	6.88	
	37	η Ursæ Majoris	59.0	18.0	38.5	58.5	17.5	36.0	56.0	13 41 57.64	+ .32	. . .	.60	13 41 32.36	4.99	
	38	η Bootis	11.8	25.2	38.5	51.4	4.8	18.0	31.4	13 47 51.59	.12	. . .	.60	13 47 26.11	6.29	
	39	α Bootis	28.4	42.1	55.8	9.1	22.6	35.2	48.5	14 9 8.81	+ .13	. . .	.62	14 8 43.32	5.89	
	40	α² Libræ	14.4	28.2	41.1	54.2	6.8	19.5	32.4	14 42 53.80	— 0.07	. . .	.65	14 42 28.08	+0 7.06	
	41	β Ursæ Minoris	..	6.0	54.0	42.0	28.5	14.5	3.0	14 52 4.66	22.77	. . .	.66	14 51 16.23	—0 3.93	
	42	β Libræ	37.5	50.2	2.8	15.5	28.0	40.5	53.5	15 9 15.43	— 0.03	. . .	.68	15 8 49.72	+0 6.83	
	43	α Coronæ Borealis	58.5	13.5	26.6	40.8	54.9	8.5	23.0	15 28 40.83	+ 0.17	. . .	.69	15 28 15.31	5.20	
	44	α Serpentis	34.4	47.2	0.4	12.3	25.5	37.5	50.0	15 37 12.47	.05	. . .	.70	15 36 46.82	+0 6.25	
	45	ζ Ursæ Minoris	2.0	5.0	6.5	7.0	8.0	9.5	12.0	15 50 7.15	+ 1.49	. . .	.71	15 49 42.93	—0 10.88	
	46	β¹ Scorpii	21.5	35.6	48.4	1.5	15.3	27.5	41.5	15 57 1.61	— 0.09	. . .	.72	15 56 35.80	+0 7.36	
	47	δ Ophiuchi	10.5	23.3	36.0	48.3	0.5	13.0	25.8	16 6 48.20	.00	. . .	.74	16 6 22.46	6.66	
	48	α Scorpii	49.0	3.0	17.2	31.3	45.4	59.0	12.5	16 20 31.06	— 0 0.14	. . .	25.74	16 20 5.18	7.75	
	49	Polaris	..	28.0	25.0	..	..	..	..	0 52 26.50	+12 1.30	. . .	26.21	1 4 1.59	59.31	
17	50	β Corvi	54.4	8.0	21.5	35.4	48.5	1.5	15.4	12 26 34.96	— 0 0.04	. . .	10.74	12 26 24.18	6.84	
	51	Polaris, S. P.	32.0	42.0	25.0	20.0	12.0	10.0	15.0	13 4 22.28	— 9.59	. . .	.74	13 4 1.95	59.00	
	52	η Ursæ Majoris	44.0	4.0	23.5	43.0	2.5	21.5	42.0	13 41 42.93	+ 0 0.36	. . .	— 10.74	13 41 32.55	+0 5.00	

From May 7 to May 17, adjusting the rate of clock.

DATE.	CLOCK. At 13h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
May 5	f 17.15	l .026	+0.058	+0.180	0.000
6	16.51	.026			
7	17.81	g .054			
10	44.43	.123			
11	47.37	.123			
13	20.80	.072	.135	.159	0.000
15	24.26	.072			
16	25.56	.054	.015	.308	0.000
17	f 10.74	l .004	+0.058	+0.254	0.000

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	h. s.	s.	s.	h. m. s.	m. s.	
May 17	1	η Bootis	56.5	10.5	23.8	36.5	49.3	2.8	16.5	13 47 36.56	+ 0 0.15	. .	— 10.73	13 47 25.98	+0 6.29	B.
	2	α Bootis	14.0	27.3	40.6	53.9	7.0	20.0	33.4	14 8 53.74	.15	. .	.73	14 8 43.16	5.89	
	3	ε Bootis	48.9	3.0	17.5	31.3	45.5	59.3	13.3	14 38 31.26	+ .19	. .	.73	14 38 20.72	5.52	
	4	β Libræ	22.6	34.9	47.5	0.5	12.5	25.6	38.5	15 9 0.30	+ .02	. .	.72	15 8 49.60	6.83	
18	†5	β Corvi	53.8	7.2	21.2	34.8	48.3	1.5	15.1	12 26 34.56	— 0.22	. .	.65	12 26 23.69	6.85	
	6	α Scorpii	..	48.5	2.7	16.5	30.3	43.8	58.2	16 20 23 33	7.25	. .	.89	16 20 5.19	7.72	K.
	7	Ophiuchi, (5567)	..	20.2	34.6	48.2	0.8	13.8	27.9	16 31 54.25	6.88	. .	.88	16 31 36.49	7.53	
	8	Weisse XVI, 780	3.7	16.5	29.2	42.0	54.0	6.2	19.1	16 40 41.53	0.03	. .	.88	16 40 30.62	6.42	
	9	Ophiuchi, (5700)	39.0	52.6	5.7	19.2	32.2	45.0	58.7	16 48 18.91	— .19	. .	.87	16 48 7.85	7.54	
	10	α Herculis	14.8	27.8	40.8	54.1	6.6	19.3	32.6	17 7 53.71	+ .07	. .	.86	17 7 42.92	5.68	
	11	α Ophiuchi	24.7	37.6	50.6	3.4	15.9	28.9	41.8	17 28 3.27	+ .06	. .	10.85	17 27 52.48	5.83	
19	12	β Corvi	53.2	6.9	20.4	34.2	47.5	0.7	14.5	12 26 33.91	— .22	. .	9.85	12 26 23.84	6.86	B.
	13	η Ursæ Majoris	43.0	3.0	22.8	42.0	1.7	20.4	40.5	3 41 41.91	+ .49	. .	.79	13 41 32.61	5.02	
	14	η Bootis	56.2	9.5	22.3	36.2	49.4	2.2	15.5	13 47 35.90	.11	. .	.79	13 47 26.22	6.29	
	15	ε Bootis	47.3	1.9	16.5	30.4	44.5	58.3	12.5	14 38 30.20	+ .20	. .	.76	14 38 20.64	5.52	
	16	α^2 Libræ	59.3	12.4	25.2	38.2	51.1	3.8	17.3	14 41 38.19	— 0.16	. .	.75	14 41 28.28	+0 6.99	
	17	β Ursæ Minoris	1.0	49.0	37.0	25.0	12.0	58.0	47.0	14 51 24.14	+ 1.58	. .	.74	14 51 15.98	—0 3.87	
	18	α Coronæ Borealis	42.2	56.4	10.5	24.4	38.5	52.5	7.4	15 28 24.56	0.19	. .	.72	15 28 15.03	+0 5.18	
	19	ζ Ursæ Minoris	..	..	49.0	50.5	52.0	52.0	55.0	15 50 51.70	+ 2.09	. .	.70	15 50 44.09	—0 10 87	
	20	δ Ophiuchi	54.6	7.5	20.2	32.7	44.8	57.2	10.3	16 6 32.47	— 0.06	. .	.69	16 6 22.72	+0 6.63	
	21	α Scorpii	33.2	47.3	1.2	15.4	29.4	42.5	57.2	16 20 15.17	.26	. .	9.69	16 20 5.22	7.71	
20	22	β Corvi	52.4	5.8	19.4	33.2	46.6	0.2	13.4	12 26 33.00	— .22	. .	8.84	12 26 23.94	6.86	
	23	η Ursæ Majoris	42.0	2.0	21.4	41.0	0.5	19.4	39.5	13 41 40.83	+ .49	. .	.79	13 41 32.53	5.03	
	24	η Bootis	54.9	8.5	21.9	34.8	48.1	1.1	14.5	13 47 34.83	+ 0.11	. .	.78	13 47 26 16	6.30	
	25	ε Bootis	..	..	15.4	..	43.2	57.0	11.5	14 38 46.77	— 17.50	. .	8.75	14 38 20.52	5.52	
21	26	η Ursæ Majoris	41.0	1.0	20.8	40.5	59.8	18.6	38.5	13 41 40.03	+ 0.49	. .	7.93	13 41 32.59	5.04	
	27	η Bootis	53.9	7.5	20.8	33.6	46.9	0.2	13.8	13 47 33.81	.11	. .	7.93	13 47 25.99	6.30	
24	28	α Ursæ Majoris	58.4	26.0	43.5	21.0	47.8	14.0	42.0	10 54 20.39	.56	. .	5.43	10 54 15.52	10.27	
	29	δ Leonis	24.2	37.7	51.3	4.9	17.9	31.2	44.9	11 6 4.59	.22	. .	.42	11 5 59.39	8.07	
	30	δ Hydræ et Crateris	10.7	23.9	35.8	49.2	1.8	14.5	27.3	11 11 49.03	.08	. .	.42	11 11 43.69	7.11	
	31	β Leonis	42.9	55.9	9.1	22.1	35.0	47.5	0.8	11 41 21.90	.20	. .	.40	11 41 16.70	7.45	
	32	Moon, 1st L.	56.5	9.2	22.5	35.2	48.0	0.5	13.5	12 17 35.06	.13	+ 61.19	.37	12 18 31.01	. .	
	33	β Corvi	48.5	1.8	15.5	29.4	43.4	56.4	9.6	12 26 29.23	+ 0 0.05	. .	.37	12 26 23.91	6.90	
	34	Polaris, S. P.	..	..	22.0	11.0	9.0	9.0	11.0	13 12 12.40	— 8 1.05	. .	.34	13 4 6.01	55.02	
	35	α Virginis	37.5	50.5	3.4	16.5	28.5	41.2	54.0	13 17 15.94	+ 0 0.10	. .	.33	13 17 10.71	6.91	
	36	η Ursæ Majoris	38.5	58.5	18.2	38.0	57.0	16.0	36.2	13 41 37.49	.40	. .	.32	13 41 32.57	5.09	
	77	η Bootis	51.5	5.0	18.1	31.3	43.8	57.5	11.0	13 47 31.17	.22	. .	.32	13 47 26.07	6.32	
	38	ε Bootis	43.5	57.8	11.5	25.5	39.5	53.4	8.3	14 38 25.64	.26	. .	5.30	14 38 20.60	5.53	
25	39	β Corvi	47.2	1.4	14.8	28.4	41.9	55.1	9.1	12 26 28.27	0.05	. .	4.47	12 26 23.85	6.91	
	40	η Ursæ Majoris	38.0	57.5	17.2	36.5	56.0	15.0	..	13 41 26.70	10.15	. .	4.42	13 41 32.43	5.10	
28	41	δ Hydræ et Crateris	6.2	19.2	32.3	45.0	57.8	10.4	23.5	11 11 44.91	0.05	. .	1.44	11 11 43.52	7.16	
	42	β Leonis	39.1	52.2	5.1	18.0	31.1	43.8	57.0	11 41 18.04	.18	. .	.42	11 41 16.80	7.49	
	43	γ Ursæ Majoris	42.5	5.0	26.8	48.0	9.5	30.0	52 0	11 45 47.69	.46	. .	.42	11 45 46.73	8.23	
	44	β Corvi	44.3	58.1	12.0	25.2	39.0	52.0	6.0	12 26 25.23	.01	. .	1.39	12 26 23.85	6.94	
29	45	β Corvi	42.9	57.1	11.2	24.7	38.1	51.1	5.1	12 26 24.31	+ 0.01	. .	0.37	12 26 23.95	6.95	
	46	Polaris, S. P.	31.0	48.0	22.0	14.0	8.0	5.0	9.0	13 4 19.57	— 9.53	. .	.34	13 4 9.70	51.27	
	47	α Virginis	32.1	45.5	58.4	11.2	24.0	36.3	49.4	13 17 10.99	+ 0.07	. .	.33	13 17 10.73	6.93	
	48	η Ursæ Majoris	33.8	53.5	13.0	32.0	52.0	11.0	31.0	13 41 32.33	.41	. .	.32	13.41 32.42	5.16	
	49	η Bootis	46.4	59.8	12.7	26.4	39.5	52.4	5.7	13 47 26.13	+ 0.20	. .	— 0.31	13.47 26.02	6.34	
June 1	50	α Ceti	..	..	3.2	15.0	..	27.5	53.0	2 54 24.67	— 9.36	. .	+ 2.43	2 54 17.74	8.97	
	51	α Persei	25.5	45.0	4.4	23.5	42.7	1.0	21.0	3 13 23.30	+ 0.40	. .	.44	3 13 26.14	11.99	
2	†52	β Corvi	40.7	54.5	8.2	21.9	35.2	48.3	2.2	12 26 21.57	+ 0 0.01	. .	+ 2.50	12 26 24.08	+0 6.89	K.

DATE.	CLOCK. At 14h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
May 17	f 10.73	l .004	+0.058	+0.254	0.000
18	10.97	.035			
19	9.78	.042	—0.040	.442	0.000
20	8.77	.042			
21	7.92	.034			
24	5.32	.038	+0.140	.219	0.000
25	4.41	.038			
28	1.32	.042			
29	f 0.30	l .042	+0.112	+0.254	0.000

5 +0.36 applied to correction for clock.
52 —0.36 do. do.

ATE. 847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850 0
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.
ne 2	1	Polaris, S. P.	30.0	47.0	20.0	15.0	9.0	5.0	12.0	13 4 19.71	— 0 10.15	. .	+ 2.89	13 4 12.45	+0 48.30
	2	α Virginis	29.5	42.1	55.0	7.4	20.5	33.2	45.7	13 17 7.63	+ 0.05	. .	.90	13 17 10.58	6.96
	3	η Ursæ Majoris	30.0	50.0	9.7	29.0	48.5	7.4	27.0	13 41 28.80	.42	. .	.92	13 41 32.14	5.23
	4	η Bootis	43.0	56.3	10.0	23.2	36.0	49.0	3.1	13 47 22.94	.19	. .	.92	13 47 26.05	6.37
	5	α Bootis	0.3	13.1	27.0	41.1	53.5	6.3	20.2	14 8 40.21	0 0.20	. .	2.93	14 8 43.34	5.94
4	6	Polaris, S. P.	30.0	38.0	20.0	10.0	5.0	..	..	12 56 20.60	7 48.17	. .	4.58	13 4 13.35	47.00
	7	α Virginis	28.2	40.8	53.4	6.2	19.0	31.4	44.0	13 17 6.14	0 0.12	. .	.59	13 17 10.85	6.97
	8	η Ursæ Majoris	28.3	48.5	8.0	27.5	47.2	5.2	26.2	13 41 27.27	.39	. .	.60	13 41 32.26	5.26
	9	η Bootis	41.4	55.1	8.2	21.3	34.8	47.3	1.0	13 47 21.30	.23	. .	.60	13 47 26.13	6.38
	10	α Bootis	58.1	12.0	25.3	38.7	51.5	4.5	18.5	14 8 38.37	.23	. .	.61	14 8 43.21	5.96
	11	ε Bootis	33.0	47.2	1.3	15.5	30.3	43.7	58.3	14 38 15.61	.26	. .	.63	14 38 20.50	5.56
	12	α^2 Libræ	44.5	57.6	10.7	23.5	36.4	49.0	2.3	14 42 23.43	+ 0.10	. .	.63	14 42 28.16	+ 6.97
	13	β Ursæ Minoris	..	..	22.0	10.0	58.0	44.0	32.0	14 51 57.20	— 46.82	. .	.64	14 51 15.02	— 3.35
	14	β Libræ	7.0	19.5	32.3	45.0	57.4	10.0	22.4	15 8 44.80	+ 0.13	. .	.65	15 8 49.58	+ 6.77
	15	α Coronæ Borealis	27.7	42.1	56.0	10.5	24.5	38.0	52.4	15 28 10.17	0 0.26	. .	4.66	15 28 15.09	5.14
7	16	Polaris, S. P.	31.0	45.0	25.0	15.0	..	8.0	14.0	13 3 3.00	1 6.70	. .	6.05	13 4 15.75	44.96
	17	α Virginis	26.5	39.7	52.8	5.0	17.8	29.8	43.2	13 17 4.92	0 0.02	. .	.05	13 17 10.99	6.99
	18	η Ursæ Majoris	27.0	47.2	6.0	26.0	45.0	4.2	24.0	13 41 25.63	.43	. .	.07	13 41 32.13	5.31
	19	η Bootis	40.1	53.4	6.8	20.2	33.4	46.3	0.1	13 47 20.04	.17	. .	.07	13 47 26.28	6.40
	20	α Bootis	57.0	10.4	24.0	37.3	50.2	3.2	17.0	14 8 37.01	.18	. .	.08	14 8 43.27	5.97
	21	ε Bootis	31.8	46.1	0.2	14.3	28.2	42.0	56.4	14 38 14.14	+ .24	. .	.09	14 38 20.47	5.58
	22	α^2 Libræ	43.0	56.3	9.2	22.1	35.2	47.5	1.2	14 42 22.07	— 0.01	. .	.10	14 42 28.16	+ 6.98
	23	β Ursæ Minoris	44.5	32.5	21.0	8.0	56.0	42.0	31.0	13 51 7.90	+ 1.20	. .	.10	14 51 15.20	— 3.21
	24	β Libræ	5.2	18.1	30.8	43.2	56.0	8.2	21.4	15 8 43.27	0.02	. .	.11	15 8 49.40	+ 6.76
	25	α Coronæ Borealis	26.3	40.8	55.1	9.2	23.0	36.5	51.2	15 28 8.87	.23	. .	.12	15 28 15.22	5.15
	26	α Serpentis	2.1	15.2	28.0	40.8	53.0	5.2	18.0	15 36 40.33	0.11	. .	.12	15 36 46.56	+ 6.14
	27	ζ Ursæ Minoris	29.0	31.0	33.0	35.0	36.0	38.0	39.0	15 49 34.14	+ 1.55	. .	.13	15 49 41.82	— 10.40
	28	β^1 Scorpii	50.0	3.1	16.9	30.3	43.2	56.4	10.0	15 56 29.99	— 0.03	. .	.13	15 56 36.09	+ 7.17
	29	δ Ophiuchi	38.9	54.8	4.5	17.1	29.3	41.5	54.4	16 6 16.79	+ .06	. .	.14	16 6 22.99	6.48
	30	α Scorpii	17.2	31.5	45.4	49.2	13.1	26.7	41.0	16 19 59.16	— 0 0.08	. .	.15	16 20 5.23	7.50
8	31	Polaris, S. P.	..	..	26.0	16.0	11.0	11.0	15.0	13 12 15.80	8 5.79	. .	.80	13 4 16.81	44.17
	32	α Virginis	25.2	38.2	51.3	4.1	16.5	28.9	42.0	13 17 3.74	— 0 0.02	. .	.81	13 17 10.53	7.00
	33	η Ursæ Majoris	26.0	46.0	6.0	25.0	44.5	3.5	24.0	13 41 25.00	+ .45	. .	.82	13 41 32.27	5.33
	34	η Bootis	39.1	52.4	6.2	19.3	32.4	45.5	59.0	13 47 19.13	.15	. .	.82	13 47 26.10	6.41
	35	α Bootis	56.0	10.0	22.9	36.4	49.7	2.8	16.4	14 8 36.31	.16	. .	.83	14 8 43.30	5.98
	36	ε Bootis	31.0	45.4	59.5	13.7	28.0	41.5	56.0	14 38 13.59	+ .22	. .	.85	14 38 20.66	5.58
	37	α^2 Libræ	42.4	55.8	8.2	21.1	34.1	47.0	0.5	14 41 21.30	— .06	. .	.85	14 41 28.09	6.98
	38	α Serpentis	2.4	15.2	27.9	40.5	52.8	5.2	17.9	15 36 40.27	+ .08	. .	.31	15 36 46.66	6.13
	39	β^1 Scorpii	49.9	3.4	16.8	30.2	43.1	56.2	9.8	15 56 29.91	— 0.08	. .	.32	15 56 36.15	7.16
	40	δ Ophiuchi	..	..	..	16.6	29.0	41.2	54.3	16 6 35.27	0 18.76	. .	6.33	16 6 22.84	6.46
9	41	Polaris, S. P.	..	..	25.0	15.0	10.0	11.0	15.0	13 12 15.20	— 8 5.50	. .	7.56	13 4 17.26	43.31
	42	η Ursæ Majoris	25.5	45.0	5.0	24.5	44.0	2.5	22.5	13 41 24.14	+ 0 0.45	. .	.58	13 41 32.17	5.35
	43	η Bootis	37.5	52.0	5.4	18.5	31.7	44.5	58.0	13 47 18.23	+ 0.16	. .	.58	13 47 25.97	6.41
	44	α Bootis	..	..	..	36.0	49.0	2.0	15.5	14 8 55.62	— 19.78	. .	.59	14 8 43.43	5.99
	45	ε Bootis	30.1	44.2	58.7	13.0	27.0	40.4	55.2	14 38 12.66	+ 0.23	. .	.61	14 38 20.52	5.59
	46	α^2 Libræ	41.5	54.8	7.8	20.5	33.6	46.4	0.1	14 42 20.67	— 0.05	. .	.61	14 42 28.23	+ 6.98
	47	β Ursæ Minoris	42.5	31.0	19.0	7.0	54.0	40.0	29.0	14 51 6.07	+ 1.25	. .	.62	14 51 14.97	— 3.11
	48	β Libræ	4.0	16.4	29.5	42.0	55.1	7.2	20.0	15 8 42.03	0.00	. .	.62	15 8 49.65	+ 6.76
	49	α Coronæ Borealis	25.1	39.0	53.0	7.5	21.0	35.0	49.0	15 28 7.09	0.22	. .	.64	15 28 14.95	+ 5.15
	50	ζ Ursæ Minoris	27.0	30.0	31.5	33.0	34.0	34.0	37.0	15 49 32.36	+ 1.67	. .	.65	15 49 41.68	— 10.32
	51	β^1 Scorpii	..	2.0	15.4	28.5	42.2	55.0	8.4	15 56 35.25	— 6.72	. .	.65	15 56 36.18	+ 7.15
	52	δ Ophiuchi	37.5	50.1	2.4	15.0	27.8	40.2	53.2	16 6 15.17	+ 0 0.03	. .	— 7.66	16 6 22.86	+0 6.46

DATE.	CLOCK. At 14h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
June 2	s 2.93	10.045	+0.100	+0.270	0.0
4	4.61	.035	.150	.200	.0
7	6.07	.031	.070	.307	.0
8	6.83	.032	+0.038	+0.346	0.0
8	6.26	.032			
9	s 7.59	10.032	+0.045	+0.338	0.0

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
June 9	1	η Draconis	30.0	57.0	24.0	50.5	17.0	42.5	10.0	16 21 50.14	+ 0 0.68		+ 7.63	16 21 58.45	−0 0.16	B.
11	2	η Bootis	..	51.1	4.4	18.0	31.0	43.8	57.4	13 47 24.28	— 6.48		8.22	13 47 26.02	+ 6.43	K.
	3	α Bootis	54.8	8.2	21.8	35.2	48.3	1.0	14.8	14 8 34.87	+ 0.17		.23	14 8 43.37	6.00	
	4	Bootis (4783)	19.3	35.8	52.0	7.8	24.1	39.8	56.2	14 19 7.86	.32		.23	14 19 16.41	5.27	
	5	Bootis (4797)	2.6	18.5	34.3	50.1	5.5	20.8	36.7	14 21 49.79	+ 0.30		.23	14 21 58.32	5.35	
	6	Bootis (4816)	..	..	42.8	58.9	14.4	29.9	46.0	14 27 14.40	— 15.51		.23	14 27 7.12	5.20	
	7	Bootis (4825)	..	..	..	17.0	32.5	47.9	3.9	14 28 40.32	23.27		.23	14 28 25.28	5.26	
	8	ε Bootis	..	43.7	58.2	12.3	26.2	39.9	54.4	14 38 19.12	6.86		.24	14 38 20.59	5.61	
	9	α^2 Libræ	..	54.0	7.2	20.3	33.0	45.8	58.9	14 42 26.53	— 6.55		.24	14 42 28.22	6.97	
	10	ζ Aquilæ	38.3	51.3	4.4	17.2	30.0	42.3	55.8	18 58 17.04	+ 0.13		.33	18 58 25.50	5.48	
	11	Cygni (6813)	14.8	31.2	47.0	2.9	18.8	34.5	50.6	19 45 2.83	.31		.35	19 45 11.49	3.61	
	12	Cygni (6849)	30.0	46.1	2.2	17.8	33.8	49.2	5.4	19 50 17.79	+ 0.31		.35	19 50 26.45	3.67	
	13	Cygni (6857)	..	..	32.6	49.3	5.7	21.6	38.2	19 52 5.48	— 16.01		.35	19 51 57.82	3.47	
	14	Cygni (6875)	..	..	57.3	13.1	28.2	43.4	59.2	19 54 28.24	— 15.31		8.35	19 54 21.28	3.75	
12	15	α Bootis	53.8	7.2	20.7	34.0	47.5	0.2	13.9	14 8 33.90	+ 0.16		9.12	14 8 43.18	6.01	B.
	16	ε Bootis	28.5	43.0	57.2	..	..	..	..	14 37 42.90	28.46		.12	14 38 20.48	5.61	
	17	α Serpentis	0.2	13.2	25.0	37.4	50.4	2.4	15.5	15 36 37.74	+ 0.07		.13	15 36 46.94	6.13	
	18	β^1 Scorpii	47.0	..	..	..	40.2	53.1	7.0	15 56 36.82	— 9.94		.13	15 56 36.01	7.15	
	19	δ Ophiuchi	36.0	48.1	1.0	14.0	26.2	38.5	51.2	16 6 13.57	+ 0.01		.14	16 6 22.75	6.46	
13	20	η Bootis	37.0	50.0	3.2	16.9	29.5	43.0	56.3	13 47 16.56	.15		.33	13 47 26.04	6.45	
	21	α Bootis	53.9	7.6	20.5	34.0	47.0	0.0	13.5	14 8 33.79	.16		.34	14 8 43.29	6.02	
	22	Bootis (4783)	18.3	34.4	50.3	6.5	23.0	38.4	55.0	14 19 6.56	+ 0.32		.34	14 19 16.22	5.29	
	23	Bootis (4797)	..	17.4	33.0	49.0	4.3	19.8	35.5	14 21 56.50	— 7.55		.34	14 21 58.29	5.37	
	24	Bootis (4816)	10.0	26.2	42.1	57.8	13.3	28.8	45.1	14 26 57.61	+ 0.31		.34	14 27 7.26	5.26	
	25	ε Bootis	28.0	42.7	57.0	11.1	25.1	39.0	53.3	14 38 10.87	+ .22		.34	14 38 20.43	5.62	
	26	α^2 Libræ	40.1	53.2	6.4	19.0	32.2	44.4	57.5	14 42 18.97	— .07		.34	14 42 28.24	6.99	
	27	β^1 Libræ	2.2	15.0	27.5	40.5	53.0	5.2	18.0	15 8 40.20	— .03		.35	15 8 49.52	6.77	
	28	α Coronæ Borealis	23.3	37.3	51.0	..	19.5	33.0	47.0	15 28 5.18	+ .25		.35	15 28 14.78	5.16	
14	29	α Virginis	23.2	36.2	49.1	1.5	14.5	26.8	39.8	13 17 1.59	— .04		.06	13 17 10.61	7.05	K.
	30	Canum Venat. (4536)	2.5	18.5	34.4	50.3	6.0	21.7	37.8	13 27 50.17	+ 0.32		.06	13 27 59.55	6.27	
	31	Canum Venat. (4552)	44.8	0.8	16.6	32.3	..	2.8	19.0	13 30 29.38	2.93		.06	13 30 41.37	6.22	
	32	Canum Venat. (4595)	45.0	1.4	17.5	33.9	49.9	5.8	22.4	13 39 33.70	+ 0.32		.06	13 39 43.08	5.99	
	33	η Bootis	..	..	..	..	..	43.0	56.7	13 47 49.85	— 32.81		.07	13 47 26.11	6.46	
	34	β Libræ	2.5	15.3	28.2	40.8	53.3	5.7	18.7	15 8 40.64	0.03		.07	15 8 49.68	6.77	
	35	α Coronæ Borealis	..	..	..	5.2	19.8	33.8	48.2	15 28 26.75	20.87		.07	15 28 14.95	5.17	
15	36	Polaris, S. P.	..	49.0	31.0	22.0	15.0	15.0	..	12 4 26.40	12.80		.07	12 4 22.67	38.26	B.
	37	α Virginis	23.4	36.3	49.0	2.1	14.2	26.8	40.0	13 17 1.69	0.04		.05	13 17 10.70	7.06	
	38	Canum Venat. (4536)	2.2	18.2	34.4	50.2	6.0	21.3	37.7	13 27 50.00	+ .31		.04	13 27 59.35	6.29	
	39	Canum Venat. (4552)	44.8	0.5	16.5	32.2	47.8	3.1	19.1	13 30 32.00	+ 0.30		.04	13 30 41.34	6.23	
	40	Canum Venat. (4595)	45.0	1.5	..	34.0	50.0	5.5	22.0	13 39 36.33	— 2.34		.04	13 39 43.03	6.00	
	41	η Bootis	36.8	50.2	3.4	16.8	30.2	43.0	56.5	13 47 16.70	+ 0.15		.04	13 47 25.89	6.47	
	42	α Bootis	54.0	9.0	20.3	33.4	47.4	0.3	14.0	14 8 33.77	.16		.03	14 8 42.96	6.04	
	43	ε Bootis	28.4	42.7	57.0	11.2	25.4	39.0	53.5	14 38 11.03	+ .22		.02	14 38 20.27	5.63	
	44	α^2 Libræ	40.2	53.5	6.5	19.5	32.3	45.0	58.2	14 42 19.31	— 0.07		.02	14 42 28.26	+ 7.00	
	45	β Ursæ Minoris	..	29.0	17.0	5.0	52.0	38.0	27.5	14 51 28.08	22.56		.02	14 51 14.54	− 2.81	
	46	β Libræ	2.4	15.7	28.2	40.9	53.5	5.8	18.5	15 8 40.69	— 0.03		.01	15 8 49.67	+ 6.77	
	47	α Coronæ Borealis	23.5	37.8	51.8	6.2	20.2	33.5	48.0	15 28 5.86	+ .22		.00	15 28 15.08	5.17	
	48	α Serpentis	0.0	12.5	25.4	37.8	50.2	2.2	15.4	15 36 37.64	0.07		.00	15 36 46.71	+ 6.14	
	49	ζ Ursæ Minoris	26.0	28.0	30.0	32.0	33.0	32.0	..	15 49 0.17	32.53		.00	15 49 41.70	− 10.02	
	50	δ Ophiuchi	36.0	48.4	1.5	14.5	27.0	39.0	51.5	16 6 13.99	0.01		9.00	16 6 23.00	+ 6.45	
	51	η Draconis	28.0	55.5	23.0	49.0	15.0	41.0	58.5	16 21 48.57	.71		8.99	16 21 58.27	− 0.11	
17	52	α Bootis	54.8	8.0	21.5	34.9	48.2	1.3	14.8	14 8 34.79	+ 0 0.16		+ 8.20	14 8 43.15	+0 6.05	K.

DATE.	CLOCK. At 15h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
June 11	s 8.24	l 0.002			
12	9.12	.009			
13	9.35	.009			
14	9.07	l .004			
15	s 9.02	g 0.017	+0.029	+0.362	0.000

ATE. 847.	No. for ref.		OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R Ascension.	Reduction to 1850 0	
				s.	s.	s.	s.	s.	s.	s.	H. M. S.	M. s.	s.	s.	H M. S.	M. s.	
ıe 17	1		Bootis (4783) . . .	..	35.6	52.1	8.3	24.0	39.6	56.3	14 19 15.98	— 0 7.77	. .	+ 8.19	14 19 16.40	+ 0 5.35	E
	2		Bootis (4797) . . .	2.6	18.6	34.4	50.0	5.2	20.7	36.3	14 21 49.69	+ 0.30	. .	.19	14 21 58.18	5.42	
	3	γ	Bootis	..	..	..	48.4	4.6	20.2	36.7	14 26 12.47	— 23.81	. .	.18	14 25 56.84	5.21	
	4		Bootis (4825) . . .	29.3	45.3	0.9	16.8	32.5	47.7	3.8	14 28 16.61	+ 0.30	. .	.18	14 28 25.09	5.32	
18	5	α	Virginis	23.4	36.4	49.2	2.0	14.7	27.0	40.0	13 17 1.81	— 0.04	. .	.88	13 17 10.65	7.08	E
	6		Canum Venat. (4536)	..	18.0	..	..	..	..	..	13 27 18.00	+ 31.98	. .	8.88	13 27 58.86	6.33	
21	7	η	Ursæ Majoris . . .	23.5	43.0	3.0	23.0	42.0	1.0	21.0	13 41 22.36	0.46	. .	9.14	13 41 31.96	5.60	
	8	η	Bootis	36.9	50.1	3.4	16.5	30.0	43.0	56.5	13 47 16.63	.15	. .	.14	12 47 25.92	6.52	
	9	α	Bootis	53.5	7.0	20.4	34.0	47.0	0.0	14.0	14 8 33.70	0.16	. .	.14	14 8 43.00	6.09	
	10		Bootis (4783) . . .	18.2	35.0	51.0	7.0	23.0	38.5	..	14 18 58.78	8.38	. .	.14	14 19 16.30	5.40	
	11		Bootis (4797) . . .	1.8	17.4	33.3	49.0	4.4	19.8	35.9	14 21 48.80	0.30	. .	.15	14 21 58.25	5.47	
	12	γ	Bootis	59.0	15.0	31.0	47.0	3.4	19.0	35.5	14 25 47.13	.32	. .	.15	14 25 56.60	5.30	
	13		Bootis (4825) . . .	28.2	44.0	0.0	16.0	31.4	46.5	3.0	14 28 15.59	.30	. .	.15	14 28 25.04	5.37	
	14	ε	Bootis	28.5	43.0	57.0	11.4	25.0	39.0	53.5	14 38 11.06	.22	. .	.15	14 38 20.43	5.68	
	15		Cygni + 36° 39′ .	53.9	9.0	24.5	41.0	56.5	12.0	28.0	19 55 40.57	+ .30	. .	9.67	19 55 50.04	3.65	
23	16	κ	Virginis	58.3	11.2	24.0	36.5	49.2	1.5	14.6	14 4 36.47	— .04	. .	10.55	14 4 46.98	7.00	
	17		Moon, 1st L. . . .	38.0	51.8	5.0	18.0	31.1	44.0	57.0	14 22 17.84	— .06	+ 63.71	.56	14 23 32.05	. . .	
	18	ε	Bootis	27.1	41.1	55.4	9.8	24.0	37.9	52.0	14 38 9.61	+ 0.22	. .	.56	14 38 20.39	+ 5.70	
	19	β	Ursæ Minoris . . .	..	27.0	14.5	2.0	50.0	37.0	25.0	14 51 25.92	— 22.55	. .	.57	14 51 13.94	— 2.34	
	20	β	Libræ	1.0	13.5	26.2	39.0	52.0	4.0	17.0	15 8 38.96	— 0.03	. .	.58	15 8 49.51	+ 6.80	
	21	α	Coronæ Borealis . .	22.0	36.1	50.0	4.0	18.3	32.0	46.4	15 28 4.11	+ .22	. .	.59	15 28 14.92	5.22	
	22	α	Serpentis	58.0	11.0	24.0	36.0	49.0	1.6	14.0	15 36 36.23	0.07	. .	.59	15 36 46.89	+ 6.15	
	23	ζ	Ursæ Minoris . . .	24.0	27.0	29.0	30.0	31.0	31.0	34.0	15 49 29.43	+ 1.78	. .	.60	15 49 41.81	— 9.52	
	24	β^1	Scorpii	46.0	59.0	12.6	26.0	39.0	52.0	5.8	15 56 25.77	— 0.10	. .	.60	15 56 36.27	+ 7.13	
	25	δ	Ophiuchi	34.5	47.0	59.8	12.2	25.0	37.0	50.0	16 6 12.21	+ .01	. .	.61	16 6 22.83	6.44	
	26	α	Scorpii	13.0	27.4	41.0	55.3	9.0	22.5	37.0	16 19 55.03	— .15	. .	.61	16 20 5.49	7.43	
24	27	α	Bootis	52.5	5.8	19.2	32.6	45.8	58.8	12.3	14 8 32.43	+ .16	. .	.53	14 8 43.12	6.12	E
	28		Bootis (4783) . . .	16.9	33.3	49.5	5.7	21.8	37.4	53.9	14 19 5.50	.32	. .	.54	14 19 16.36	5.44	
	29		Bootis (4797) . . .	0.2	16.2	32.0	47.5	3.0	18.4	34.3	14 21 47.37	.30	. .	.54	14 21 58.21	5.51	
	30	γ	Bootis	57.6	13.8	30.2	46.3	2.0	17.8	34.3	14 25 46.00	.32	. .	.54	14 25 56.86	5.33	
	31		Bootis (4825) . . .	26.9	42.9	58.7	14.6	30.3	45.4	1.5	14 28 14.33	+ 0.30	. .	.54	14 28 25.17	5.41	
	32	ε	Bootis	..	..	..	10.0	23.7	37.6	52.2	14 38 30.88	— 20.96	. .	.54	14 38 20.46	5.70	
	33	α^2	Libræ	..	..	..	17.8	30.7	43.3	56.8	14 42 37.15	19.53	. .	.54	14 42 28.16	7.04	
	34	δ	Libræ	..	15.2	28.0	40.6	52.9	5.4	18.3	14 52 46.73	6.37	. .	.54	14 52 50.90	6.76	
	35		Moon, 1st L. . . .	17.7	31.2	44.7	57.8	11.2	24.2	37.7	15 13 57.79	— 0.18	+ 65.27	10.55	15 15 13.43	. . .	
25	36	α	Bootis	51.4	5.0	18.0	31.2	45.0	58.0	12.5	14 8 31.59	+ 0.20	. .	11.44	14 8 43.23	6.10	E
	37		Bootis (4783) . . .	..	..	48.0	4.0	20.5	36.0	52.8	14 19 20.26	— 15.76	. .	.44	14 19 15.94	5.45	
	38	γ	Bootis	56.4	13.0	29.0	45.0	1.0	16.5	33.0	14 25 44.84	+ 0.32	. .	.45	14 25 56.61	5.35	
	39		Bootis (4825) . . .	..	42.0	58.0	13.5	29.0	44.5	0.4	14 28 21.23	— 7.58	. .	.45	14 28 25.10	5.44	
	40	ε	Bootis	26.0	41.0	54.0	9.0	23.0	36.4	51.0	14 38 8.63	+ 0.25	. .	.45	14 38 20.33	5.72	
	41	α^2	Libræ	37.5	51.0	4.0	17.3	30.0	42.1	55.7	14 42 16.81	.03	. .	.45	14 42 28.29	7.05	
	42	β	Libræ	0.0	12.9	25.1	38.0	50.6	3.0	16.0	15 8 37.94	.06	. .	.46	15 8 49.46	6.81	
	43	α	Coronæ Borealis . .	21.0	35.0	49.3	3.2	17.4	31.0	45.0	15 28 3.13	.24	. .	.47	15 28 14.84	5.23	
	44	α	Serpentis	57.0	10.0	23.0	35.5	48.0	0.0	13.0	15 36 35.21	.13	. .	.47	15 36 46.81	6.16	
	45	ϑ	Libræ	19.3	33.0	46.0	59.1	12.0	24.5	38.0	15 44 58.84	+ .02	. .	.48	15 45 10.34	7.04	
	46	δ	Scorpii	28.9	42.5	56.0	9.9	23.0	36.0	50.0	15 51 9.47	— .01	. .	.48	15 51 20.94	+ 7.25	
	47		Moon, 1st L. . . .	35.0	49.0	2.0	15.9	29.0	42.0	56.0	16 8 15.56	+ 0.01	+ 66.90	.49	16 9 33.96	. . .	
	48	ε	Ursæ Minoris . . .	1.5	36.0	9.0	43.0	15.0	46.0	22.0	17 1 41.79	2.10	. .	11.51	17 1 55.30	— 24.30	
26	49	α	Bootis	51.8	5.3	18.8	32.0	45.4	58.3	11.8	14 8 31.91	0.20	. .	10.98	14 8 43.09	+ 6.14	E
	50		Bootis (4783) . . .	16.4	32.8	49.0	5.3	21.0	36.9	53.5	14 19 4.99	.32	. .	.98	14 19 16.29	5.47	
	51		Bootis (4797) . . .	59.8	15.5	31.3	47.2	2.6	17.8	33.8	14 21 46.86	.31	. .	.58	14 21 58.15	5.54	
	52	γ	Bootis	56.8	13.2	29.6	45.7	1.6	17.2	33.9	14 25 45.43	+ 0 0.32	. .	+ 10.98	14 25 56.73	+ 0 5.36	

DATE.	CLOCK. At 15h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
June 17	s 8.17	g 0.034			
18	8.95	l .004			
21	9.15	.004			
23	10.57	.029	+0.027	+0.365	0.0(
24	10.54	.013			
25	11.46	.024	+0.103	+0.271	0.0(
26	s 10.97	g 0.006			

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s	m. s.	s.	s.	h. m. s.	m. s.	
June 26	1	Bootis (4825)	26.4	42.3	58.3	13.9	29.5	44.9	0.9	14 28 13.74	+ 0 0.31		+ 10.97	14 28 25.02	+0 5.44	K.
	2	ε Bootis	26.6	40.9	55.1	9.3	23.3	..	51.8	14 38 4.50	4.90		.97	14 38 20.37	5.72	
	3	a^2 Libræ	38.0	51.3	4.3	17.3	30.2	42.8	56.2	14 42 17.16	0.02		.97	14 42 28.15	7.05	
	4	β Libræ	0.4	13.3	26.2	38.6	51.4	3.7	16.8	15 8 38.63	+ 0.05		.97	15 8 49.65	6.81	
	5	α Coronæ Borealis	..	..	..	3.7	17.8	31.5	45.9	15 28 24.72	— 20.85		10.97	15 28 14.84	5.24	
30	6	α Coronæ Borealis	17.2	32.0	46.0	0.0	14.0	27.3	42.6	15 27 59.79	+ 0.22		15.10	15 28 15.11	5.27	B.
	7	α Serpentis	..	6.2	19.0	32.0	44.2	56.0	9.0	15 36 37.73	— 6.24		.10	15 36 46.59	6.18	
	8	β^1 Scorpii	..	..	..	21.3	34.0	47.0	1.0	15 56 40.82	19.95		.11	15 56 35.98	7.14	
	9	δ Ophiuchi	..	43.0	55.2	8.0	..	32.3	45.3	16 6 12.76	5.00		.11	16 6 22.87	6.45	
July 1	10	Bootis (4783)	..	..	..	1.0	16.8	32.2	49.0	14 19 24.75	— 23.81		.55	14 19 16.49	5.55	
	11	γ Bootis	52.2	9.0	25.0	41.2	57.0	12.5	29.2	14 25 40.87	+ 0.35		.55	14 25 56.77	5.44	
	12	ε Bootis	22.0	36.4	51.0	5.0	19.0	32.5	47.0	14 38 4.70	+ .23		.55	14 38 20.48	5.59	
	13	a^2 Libræ	33.3	46.4	0.0	13.0	25.9	38.3	51.5	14 42 12.63	— 0.05		.55	14 42 28.13	+ 7.09	
	14	β Ursæ Minoris	34.0	22.0	10.0	57.5	45.0	31.0	18.0	14 50 56.79	+ 1.31		.56	14 51 13.66	— 1.85	
	15	β Libræ	56.0	9.0	21.4	34.0	46.5	58.9	12.0	15 8 33.97	— 0.01		.56	15 8 49.52	+ 6.84	
	16	α Coronæ Borealis	17.0	31.0	45.4	59.5	13.4	27.0	41.5	15 27 59.26	+ 0.22		.57	15 28 15.05	5.28	
	17	α Serpentis	53.0	6.0	18.2	31.0	43.5	56.0	9.0	15 36 30.99	0.08		.57	15 36 46.64	+ 6.19	
	18	Ursæ Minoris	18.0	21.0	23.0	25.0	26.0	25.0	28.0	15 49 23.71	+ 1.71		.58	15 49 41.00	— 8.96	
	19	β^1 Scorpii	40.6	54.2	8.1	20.3	34.0	47.0	0.5	15 56 20.67	— 0.07		.58	15 56 36.18	+ 7.15	
	20	δ Ophiuchi	30.0	42.5	55.0	7.3	20.0	32.0	45.0	16 6 7.40	+ 0.02		.58	16 6 23.00	6.45	
	21	α Herculis	48.5	2.2	15.0	27.0	40.0	52.5	6.0	17 7 27.31	.13		.60	17 7 43.04	5.32	
	22	α Ophiuchi	57.5	11.4	24.8	37.1	50.2	2.5	16.0	17 27 37.07	.11		.61	17 27 52.79	5.37	
	23	γ Draconis	50.0	10.5	31.0	50.5	10.5	30.0	51.0	17 52 50.50	+ .47		15.62	17 53 6.59	1.25	
3	24	β Libræ	55.4	8.2	20.9	33.5	46.2	58.6	11.4	15 8 33.46	— .01		16.08	15 8 49.53	6.85	K.
	25	α Coronæ Borealis	16.2	30.7	44.7	58.8	12.7	26.5	40.9	15 27 58.64	+ .22		.09	15 28 14.95	5.30	
	26	α Serpentis	52.4	5.3	18.0	30.7	43.3	55.3	8.3	15 36 30.47	+ .08		.09	15 36 46.64	6.20	
	27	α Scorpii	7.0	21.0	35.0	49.2	3.0	16.5	31.0	16 19 48.97	— .13		.79	16 20 5.63	7.44	B.
	28	ζ Herculis	32.2	47.4	2.3	17.0	31.5	45.3	0.5	16 35 16.60	+ .25		.79	16 35 33.64	4.20	
	29	Ophiuchi (5627)	35.5	48.2	0.3	13.2	26.0	38.0	51.0	16 39 13.17	.05		.79	16 39 30.01	6.10	
	30	γ Draconis	49.0	9.0	30.0	49.4	9.5	29.0	50.0	17 52 49.41	.47		.82	17 53 6.70	1.26	
	31	α Lyræ	43.1	59.3	15.5	31.4	47.0	2.5	19.1	18 31 31.13	.34		.84	18 31 48.31	3.09	
	32	β Lyræ	27.0	41.5	57.0	12.0	27.0	41.4	57.0	18 44 11.84	.27		.84	18 44 28.95	3.62	
	33	ζ Aquilæ	30.0	43.0	56.0	9.0	22.0	34.2	47.2	18 58 8.77	.13		.85	18 58 25.75	5.19	
	34	δ Aquilæ	55.4	8.3	20.5	33.0	46.0	57.9	11.0	19 17 33.16	+ .06		.85	19 17 50.07	5.92	
	35	κ Aquilæ	..	1.9	13.4	..	..	..	3.0	19 28 25.80	— .07		.86	19 28 42.59	6.47	
	36	γ Aquilæ	7.0	19.7	32.5	45.0	58.0	10.3	23.5	19 38 45.14	+ .10		.86	19 39 2.10	5.47	
	37	Cygni (6813)	6.2	22.8	39.0	55.0	11.0	26.7	43.2	19 44 54.84	.33		.86	19 45 12.03	3.29	
	38	Cygni (6849)	22.0	38.0	54.0	10.0	26.0	40.6	57.5	19 50 9.73	.33		.87	19 50 26.93	3.27	
	39	Cygni (6875)	17.4	33.2	49.3	5.0	20.4	35.0	51.4	19 54 4.53	.32		16.87	19 54 21.72	3.33	
5	40	ε Bootis	20.5	34.6	48.9	3.2	17.2	30.9	45.3	14 38 2.94	+ .23		17.14	14 38 20.31	5.83	K.
	41	a^2 Libræ	51.8	45.0	58.1	11.1	23.9	36.5	49.9	14 42 10.90	— .02		.14	14 42 28.02	7.12	
	42	α Ophiuchi	57.0	10.0	23.0	35.9	48.5	1.2	14.1	17 27 35.67	+ .14		.20	17 27 53.01	5.38	
6	43	Rumker, 4950	31.9	47.9	3.7	19.4	34.9	50.2	6.2	15 0 19.17	.30		.91	15 0 37.38	5.07	
	44	β Libræ	53.5	6.4	18.9	31.8	44.3	56.7	9.7	15 8 31.61	+ 0.02		.91	15 8 49.54	6.87	
	45	Rumker, 5048	..	..	..	56.9	13.7	29.9	47.1	15 15 21.90	— 24.82		.92	15 15 15.00	4.48	
	46	Rumker, 5070	30.7	47.0	3.2	19.2	35.1	50.7	6.9	15 18 18.97	+ 0.31		.92	15 18 37.20	4.23	
	47	Rumker, 5110	45.3	1.7	18.0	34.2	50.2	5.8	22.6	15 22 33.97	+ 0.31		.92	15 22 52.20	4.58	
	48	α Coronæ Borealis	..	..	42.8	56.9	10.9	24.6	38.9	15 28 10.82	— 13.87		.92	15 28 14.87	5.33	
	49	α Serpentis	..	..	..	28.9	41.2	53.5	6.4	15 36 47.50	0 18.79		.93	15 36 46.64	+ 6.22	
	50	ζ Ursæ Minoris	..	..	19.9	21.7	22.9	22.3	25.5	15 50 22.46	1 0.03		.93	15 49 40.36	— 8.56	
	51	α Scorpii	..	..	..	47.9	1.7	15.2	29.5	16 20 8.57	— 0 20.97		17.95	16 20 5.55	+ 7.45	
7	52	ζ Ursæ Minoris	14.7	17.9	19.4	21.0	21.7	22.1	25.1	15 49 20.27	+ 0 1.21		+ 18.85	15 49 40.33	—0 8.48	

DATE.	CLOCK. At 16h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
June 26	s 10.96	g 0.006			
30	15.11	l .020			
July 1	15.58	.020	+0.042	+0.347	0.000
3	16.10	.022			
5	17.17	.022			
6	s 17.94	l 0.032	+0.061	+0.314	0.000

ATE. 847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.
y 7	1	δ Ophiuchi	26.1	38.9	51.7	3.9	16.4	28.8	41.7	16 6 3.93	+ 0 0.11	. .	+ 18.86	16 6 22.90	+0 6.48
	2	Herculis (5460)	34.8	51.3	7.9	24.3	40.5	56.4	13.1	16 14 24.04	+ 0.29	. .	.86	16 14 43.19	3.80
	3	α Scorpii	..	..	..	46.9	0.9	14.4	28.4	16 20 7.65	— 20.90	. .	.87	16 20 5.62	7.45
	4	α Herculis	..	..	..	..	37.1	49.5	2.9	17 7 49.83	25.62	. .	.90	17 7 43.11	5.33
	5	Herculis (5842)	..	54.4	9.6	24.4	39.2	53.9	9.1	17 11 31.77	7.26	. .	.90	17 11 43.41	3.91
	6	ρ Herculis	..	..	..	8.1	23.9	39.2	55.0	17 18 31.55	— 23.30	. .	18.90	17 18 27.15	3.48
8	7	ζ Herculis	29.0	44.0	58.5	13.5	27.9	42.2	57.2	16 35 13.19	+ 0.25	. .	20.02	16 35 33.46	4.23
	8	κ Ophiuchi	30.2	43.0	55.3	8.4	20.5	..	46.0	16 50 3.90	0 4.34	. .	.03	16 50 28.27	+ 5.63
	9	ε Ursæ Minoris	52.0	26.0	1.0	34.0	6.0	..	..	16 59 59.80	1 34.34	. .	.03	17 1 54.17	— 23.21
	10	α Herculis	44.2	57.2	10.3	23.0	36.0	48.2	1.5	17 7 22.91	0 0.18	. .	.03	17 7 43.12	+ 5.33
	11	α Ophiuchi	54.0	7.0	20.2	33.0	45.7	58.0	11.2	17 27 32.73	.17	. .	.04	17 27 52.94	5.38
	12	β Ophiuchi	0.0	12.5	25.5	38.0	50.6	2.5	15.5	17 35 37.80	0.15	. .	.04	17 35 57.99	5.80
	13	γ Draconis	45.0	5.5	26.0	46.0	6.0	25.5	..	17 52 35.67	10.44	. .	.05	17 53 06.16	1.28
	14	α Lyræ	39.6	56.0	12.4	28.3	44.3	0.0	16.4	18 31 28.13	0.28	. .	20.06	18 31 48.47	3.08
10	15	α Scorpii	..	17.2	30.3	44.4	58.1	11.9	..	16 19 44.38	.04	. .	21.33	16 20 05.75	7.46
	16	Herculis (5652)	15.5	31.0	45.0	59.0	13.3	28.0	42.5	16 42 59.19	0 0.24	. .	.34	16 43 20.77	+ 4.40
	17	ε Ursæ Minoris	51.0	26.5	58.0	..	..	..	..	16 58 25.17	3 7.48	. .	.35	17 1 54.00	— 22.97
	18	α Herculis	43.0	56.2	9.0	21.8	34.4	47.2	0.4	17 7 21.71	0 0.17	. .	.35	17 7 43.23	+ 5.33
	19	Herculis (5863)	53.0	8.0	22.2	37.0	52.0	7.0	22.2	17 14 37.34	.25	. .	.35	17 14 50.94	3.99
	20	α Ophiuchi	53.1	6.3	18.5	31.3	44.0	57.0	10.1	17 27 31.47	.16	. .	.36	17 27 52.99	5.38
	21	μ Herculis	27.0	41.4	55.0	9.1	23.4	37.7	52.0	17 40 9.37	.23	. .	.37	17 40 30.97	4.17
	22	γ Draconis	44.0	4.0	24.0	44.0	4.0	24.5	45.0	17 52 44.21	.39	. .	.37	17 53 5.97	1.29
	23	μ Sagittari	37.4	52.0	5.4	19.0	32.0	45.3	59.5	18 4 18.70	.04	. .	.38	18 4 40.12	7.14
	24	α Lyræ	38.9	55.0	10.9	26.8	42.5	58.8	15.0	18 31 26.84	.28	. .	.39	18 31 48.51	3.07
	25	β Lyræ	22.3	38.0	52.0	7.1	22.2	37.2	52.1	18 44 7.27	.25	. .	.40	18 44 28.92	3.59
	26	ζ Aquilæ	25.2	38.2	51.4	4.2	17.0	30.0	43.0	18 58 4.14	.17	. .	.41	18 58 25.72	5.11
	27	δ Aquilæ	51.2	4.0	16.0	28.5	41.4	53.5	6.3	19 17 28.70	.13	. .	.42	19 17 50.25	5.85
	28	γ Aquilæ	2.2	15.5	27.3	40.2	53.2	6.5	19.0	19 38 40.56	.15	. .	.42	19 39 2.13	5.39
	29	α Aquilæ	21.8	35.2	48.0	..	13.0	26.0	39.0	19 43 0.50	.11	. .	.43	19 43 22.04	5.59
12	30	β Tauri	33.3	48.0	2.0	16.2	30.3	44.5	58.8	5 16 16.16	.23	. .	.98	5 16 38.37	10.24
	31	α Orionis	54.2	7.1	19.0	31.5	44.2	57.0	10.0	5 46 31.86	.14	. .	21.98	5 46 53.98	+0 8.95
13	32	Sun, 1st L.	0.0	13.5	26.5	40.4	54.0	7.7	21.8	7 27 40.56	.20	. .	22.01	} 7 29 10.93	. .
	33	Sun, 2d L.	16.5	30.2	43.0	56.5	10.2	24.0	37.8	7 29 56.89	.20	. .	.01	}	. .
14	34	Sun, 1st L.	3.2	17.0	30.0	43.5	57.0	10.4	24.0	7 31 43.59	.26	. .	.71	} 7 33 14.80	. .
	35	Sun, 2d L.	20.0	33.2	46.0	0.0	13.3	27.0	41.0	7 34 0.07	+ 0 0.26	. .	.71	}	. .
	36	δ Ursæ Minoris	..	..	55.5	..	..	27.5	..	18 23 11.50	— 1 42.21	. .	.77	18 21 52.06	—1 8.44
	37	α Lyræ	37.2	53.8	9.2	25.1	41.1	57.3	13.6	18 31 25.34	+ 0 0.34	. .	22.77	18 31 48.43	+0 3.07
15	38	α Serpentis	44.7	58.2	10.0	22.3	34.5	47.5	0.5	15 36 22.53	.22	. .	24.03	15 36 46.78	+ 6.30
	39	ζ Ursæ Minoris	10.0	13.0	12.0	13.5	15.5	17.0	19.0	15 49 14.29	.84	. .	.04	15 49 39.17	— 7.78
	40	α Scorpii	59.4	43.9	27.3	41.0	55.3	9.3	23.0	16 19 41.31	.15	. .	.05	16 20 5.51	+ 7.50
	41	Herculis (5652)	13.2	27.9	42.0	56.3	10.3	25.3	40.3	16 42 56.47	.29	. .	.06	16 43 20.82	4.44
	42	μ^1 Sagittarii	36.1	49.5	2.2	16.0	29.5	43.0	56.5	18 4 16.11	.16	. .	.11	18 4 40.38	7.13
	43	α Lyræ	36.0	52.0	7.0	23.9	39.9	56.0	12.1	18 31 23.84	.32	. .	.13	18 31 48.29	3.08
	44	β Lyræ	19.5	35.0	49.5	4.5	19.4	34.5	49.4	18 44 4.54	.30	. .	.13	18 44 28.97	3.58
	45	ζ Aquilæ	22.5	36.2	48.2	1.0	14.0	27.0	40.0	18 58 1.27	.24	. .	.14	18 58 25.65	5.11
	46	δ Aquilæ	48.1	1.0	13.5	26.0	38.5	50.8	3.5	19 17 25.91	.22	. .	.15	19 17 50.28	5.81
	47	γ Aquilæ	59.0	13.0	25.0	38.0	50.5	3.4	16.3	19 38 37.89	.23	. .	.16	19 39 2.28	5.34
	48	α Aquilæ	20.0	33.0	45.3	58.0	10.4	23.0	36.0	19 42 57.96	.23	. .	.16	19 43 22.35	5.54
	49	β Aquilæ	49.1	2.0	14.3	26.3	39.0	51.7	4.4	19 47 26.69	.22	. .	.17	19 47 51.08	5.61
	50	α^2 Capricorni	34.0	47.3	0.0	12.5	25.0	38.0	51.0	20 9 12.54	+ 0 0.18	. .	.19	20 9 36.91	+0 6.62
	51	λ Ursæ Minoris	..	..	..	47.0	16.0	50.0	27.0	20 31 35.00	—15 28.86	. .	.19	20 16 30.33	—3 27.86
	52	61^1 Cygni	54.0	10.0	26.0	41.5	57.0	13.0	39.0	20 59 41.50	+ 0 0.31	. .	+ 24.20	21 0 6.01	+0 4.44

ATE.	CLOCK. At 16h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
ly 7	s 18.86	l 0.036	+0.099	+0.232	0.000
8	20.01	.028	.029	.196	0.000
10	21.32	.028	+0.117	+0.211	0.000
12	22.15	.018			
14	22.73	.018	+0.219	+0.121	0.000
15	s 24.05	l 0.023	+0.211	+0.132	—0.011

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
July 15	1	ζ Cygni	20.0	35.5	50.0	4.0	19.0	33.0	48.0	21 6 4.21	+ 0 0.29	. .	+ 24.21	51 6 28.71	+0 4.39	B.
	2	α Orionis	51.8	4.3	17.0	29.3	42.2	55.0	7.2	5 46 29.54	.22	. .	.33	5 46 54.09	8.89	
	3	α Canis Majoris	21.2	34.4	47.3	0.2	13.3	26.4	39.9	6 38 0.39	.17	. .	.33	6 38 24.89	7.58	
16	4	Sun, 1st L.	8.0	21.0	34.7	48.0	1.5	15.0	29.0	7 39 48.17	.26	. .	.36	} 7 41 20.66	. .	
	5	Sun, 2d L.	23.3	37.3	50.2	3.5	17.1	31.0	45.0	7 42 3.91	.26	. .	.36			
	6	ζ Aquilæ	22.4	35.7	48.0	0.9	13.7	26.8	39.8	18 58 1.04	.24	. .	.49	18 58 25.77	5.11	K.
	7	δ Aquilæ	47.8	0.7	12.9	25.4	37.9	50.5	3.2	19 17 25.49	.22	. .	.50	19 17 50 21	5.81	
	8	γ Aquilæ	59.4	12.4	24.8	37.4	50.2	2.9	15.8	19 38 37.56	.23	. .	.51	19 39 2.30	5.33	
	9	α Aquilæ	19.6	32.4	44.9	57.3	9.9	22.8	35.5	19 42 57.49	.23	. .	.51	19 43 22.23	5.53	
	10	β Aquilæ	48.6	1.3	13.8	26.2	38.7	51.2	4.1	19 47 26.27	+ 0 0.22	. .	.52	19 47 51.01	+ 5.60	
	11	Lalande, 41229	..	..	..	..	48.8	37.3	26.1	21 5 37.40	— 1 35.37	. .	.55	12 4 26.58	— 7.28	
	12	Lalande, 41236	..	..	..	..	..	43.2	32.6	21 6 7.90	2 00.29	. .	.55	21 4 32.16	7.37	
	13	Draconis (7393)	..	26.0	11.8	58.0	45.2	32.8	21.0	21 10 22.47	— 0 22.84	. .	.55	21 10 24.18	— 6.78	
	14	Aquarii (7722)	26.2	39.4	51.8	4.6	17.2	30.2	23.2	22 2 4.69	+ 0.18	. .	.58	22 2 29.45	+ 6.65	
	15	Dec. —11°.48′	14.9	28.1	40.6	53.5	6.3	49.1	32.2	22 4 53.53	+ 0.18	. .	.58	22 5 18.29	6.67	
	16	Dec. —12°.05′	..	48.2	..	13.1	..	38.8	52.0	22 8 23.02	— 9.46	. .	24.58	22 8 38.14	6.63	
17	17	Sun, 1st L.	9.5	23.1	36.0	49.5	3.0	17.0	30.0	7 43 49.73	+ 0.22	. .	25.12	} 7 45 23.00	. .	B.
	18	Sun, 2d L.	..	..	..	5.2	19.0	32.5	46.0	7 46 25.67	— 19.85	. .	.12			
	19	ε Bootis	12.0	26.5	40.2	54.4	8.4	22.5	37.2	14 37 54.46	+ 0.27	. .	.29	14 38 20.02	6.01	
	20	α^2 Libræ	24.0	37.0	49.4	2.2	15.3	29.2	42.2	14 42 2.76	.12	. .	.30	14 42 28.20	7.25	
	21	β Libræ	46.0	59.0	11.0	23.9	36.5	49.0	2.0	15 8 23.91	.16	. .	.31	15 8 49.38	+ 6.97	
	22	ζ Ursæ Minoris	8.0	11.0	10.5	11.5	13.0	15.5	17.0	15 49 12.36	+ 0.97	. .	.32	15 49 38.65	— 7.59	
	23	δ Ophiuchi	19.9	..	44.5	57.0	9.5	22.0	35.0	16 6 1.32	— 3.93	. .	.33	16 6 22.72	+ 6.55	
	24	α Scorpii	58.0	12.9	26.0	40.0	54.0	8.1	22.0	16 19 40.14	+ 0.15	. .	.34	16 20 5.63	7.51	
	25	α Herculis	55.4	13.0	30.0	46.5	3.8	21.0	38.0	16 28 46.81	0.33	. .	.34	16 29 12.48	3.50	
	26	α Ophiuchi	49.0	2.5	14.0	27.0	..	53.0	6.0	17 27 25.25	2.33	. .	.37	17 27 52.95	5.40	
	27	β Lyræ	18.1	33.5	48.3	3.0	17.8	33.0	48.0	18 44 3.10	0.29	. .	.39	18 44 28.78	3.58	
	28	δ Aquilæ	47.0	0.0	12.0	24.4	37.0	..	..	19 17 12.08	12.74	. .	.40	19 17 50.22	5.80	
	29	γ Aquilæ	58.2	11.3	24.0	36.5	49.0	2.0	15.0	19 38 36.51	0.21	. .	.42	19 39 2.14	5.33	
	30	α Aquilæ	18.2	32.0	44.0	56.5	9.0	22.0	34.5	19 42 56.60	.21	. .	.42	19 43 22.23	5.53	
	31	β Aquilæ	47.5	0.5	13.3	25.3	38.0	50.7	3.3	19 47 25.51	.20	. .	.43	19 47 51.14	5.57	
	32	α^2 Capricorni	33.0	46.0	58.7	11.0	24.0	37.0	50.2	20 9 11.41	+ 0 0.17	. .	.44	20 9 37.02	+0 6.60	
	33	λ Ursæ Minoris	..	..	25.0	47.0	14.0	46.0	25.0	20 26 19.40	—10 14.50	. .	.44	20 16 30.34	—3 27.63	
	34	61¹ Cygni	53.0	9.0	24.4	40.0	56.0	12.0	28.2	20 59 40.37	+ 0 0.31	. .	.46	21 0 6.14	+0 4.41	
	35	ζ Cygni	19.8	34.6	49.0	3.0	17.0	31.5	46.0	21 6 2.99	.28	. .	.46	21 6 28.73	+ 4.35	
	36	α Cephei	14.0	41.0	7.0	33.0	0.0	26.5	54.0	21 14 33.64	.49	. .	.46	21 14 59.59	— 0.05	
	37	β Aquarii	29.5	42.3	55.0	7.3	20.0	32.5	45.0	21 23 7.37	.17	. .	.47	21 23 33.01	+ 6.33	
	38	ε Pegasi	40.0	52.5	5.0	17.4	30.3	43.0	56.0	21 36 17.74	.21	. .	.47	21 36 43.42	5.71	
	39	Pegasi (7623)	35.4	50.0	3.3	17.5	31.4	46.0	0.8	21 45 17.73	.27	. .	.48	21 45 43.48	4.75	
	40	α Aquarii	55.0	8.0	20.2	33.0	45.0	57.5	10.0	21 57 32.67	+ 0.19	. .	.48	21 57 58.34	6.21	
19	41	β Serpentis	..	..	..	..	..	..	22.9	15 39 22.90	— 38.80	. .	.80	15 39 9.90	5.91	K.
	42	δ Coronæ Borealis	4.8	19.1	33.1	47.2	0.9	14.4	28.8	15 42 46.90	+ 0.26	. .	.81	15 43 12.97	5.30	
	43	λ Coronæ Borealis	..	17.8	33.9	49.8	5.7	21.3	37.4	15 49 57.65	— 7.70	. .	.81	15 50 15.76	4.47	
	44	Coronæ Borealis (5310)	..	23.4	39.2	54.8	10.4	25.8	41.8	15 53 2.57	— 7.56	. .	.81	15 53 20.82	4.55	
	45	β^1 Scorpii	30.1	43.7	57.0	10.3	23.4	36.2	49.9	15 56 10.09	+ 0.13	. .	.81	15 56 36.03	7.26	
	46	Serpentis (5359)	17.6	30.6	43.2	56.2	8.7	21.1	34.0	15 59 55.91	+ 0.21	. .	.81	16 0 21.93	6.00	
	47	τ Coronæ Borealis	..	27.5	43.2	59.0	14.4	29.7	45.7	16 3 6.58	— 7.54	. .	.81	16 3 24.85	4.39	
	48	δ Ophiuchi	..	31.4	44.4	57.0	9.3	21.4	34.4	16 6 2.98	— 6.11	. .	25.81	16 6 22.68	6.56	
20	49	Sun, 1st L.	11.9	25.0	39.0	52.0	5.5	18.9	32.1	7 55 52.06	+ 0.24	. .	26.41	} 7 57 26.34	. .	B.
	50	Sun, 2d L.	27.0	40.3	54.0	7.5	21.0	34.0	..	7 58 0.63	+ 6.93	. .	.41			
21	51	α Ophiuchi	..	0.7	13.4	26.2	39.0	51.4	4.6	17 27 32.55	— 6.21	. .	.52	17 27 52.86	5.42	K.
	52	ι Herculis	..	..	..	44.8	2.7	20.1	38.8	17 35 11.60	— 0 26.67	. .	+ 26.52	17 35 11.45	+0 2.48	

DATE.	CLOCK. At 17h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
July 16	s 24.45	l 0.023			
17	25.36	.017	+0.186	+0.163	0.000
19	25.83	.017			
21	s 26.51	l 0.007			

TE. 47.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s	s.	s.	h. m. s.	m. s.	
21	1	γ Ophiuchi	11.9	24.6	37.3	49.9	2.2	14.4	47.3	17 39 49.66	+ 0 0.20	. .	+ 26.52	17 40 16.38	+0 5.90	K.
	2	μ Aquilæ	35.4	48.2	0.9	13.7	26.0	38.3	51.0	19 26 13.56	.20	. .	.55	19 26 40.11	5.52	
	3	σ Aquilæ	37.2	49.9	2.6	15.1	27.6	39.9	52.6	19 31 15.00	.20	. .	.55	19 31 41.75	5.60	
	4	κ Aquilæ	20.0	33.0	45.8	58.8	11.4	23.9	36.9	19 34 58.54	.22	. .	.55	19 35 25.31	5.21	
	5	γ Aquilæ	57.2	10.2	22.9	35.8	48.5	0.8	13.8	19 38.35.60	.21	. .	.55	19 39 2.36	5.30	
	6	α Aquilæ	17.4	40.2	43.2	55.8	8.2	20.5	33.4	19 42 55.53	.21	. .	.56	19 43 22.30	5.49	
	7	η Cygni	24.7	40.0	55.5	10.8	25.8	40.5	56.0	19 50 10.47	.30	. .	.56	19 50 37.33	3.45	
	8	Cygni, (6875)	8.0	23.9	39.7	55.3	10.8	25.9	41.8	19 53 55.06	.31	. .	.56	19 54 21.93	3.15	
	9	η Sagittæ	18.8	32.4	45.8	58.9	12.0	25.0	38.7	19 57 58.80	.24	. .	.56	19 58 25.60	4.71	
	10	ϑ Aquilæ	23.4	36.0	48.7	1.2	13.6	25.8	38.7	20 3 1.06	.19	. .	.56	20 3 27.81	5.95	
	11	ρ Aquilæ	9.2	22.4	35.5	48.6	1.3	13.8	27.0	20 6 48.26	+ 0.22	. .	.56	20 7 15.04	5.05	
	12	a^1 Capricorni	..	..	57.7	10.4	23.2	35.7	48.8	20 9 23.16	— 12.69	. .	.56	20 9 37.03	6.55	
	13	Cygni (7001)	11.8	27.9	44.2	0.2	16.0	31.4	48.0	20 12 59.93	+ 0.32	. .	.56	20 13 26.81	3.14	
	14	ω^1 Cygni	1.1	20.6	39.6	58.6	17.7	35.9	55.2	20 21 58.39	.37	. .	26.56	20 22 25.32	1.87	
22	15	Sun, 1st L.	11.0	24.5	38.0	51.0	4.5	17.5	31.2	8 3 51.10	.24	. .	27.26			
	16	Sun, 2d L.	25.4	39.2	53.0	..	19.0	32.0	46.0	8 6 5.77	.27	. .	.26	8 5 25.95	. . .	B.
23	17	α Scorpii	56.0	10.0	24.3	38.0	52.0	5.4	20.0	16 19 37.96	.19	. .	.38	16 20 5.53	7.56	
	18	Moon, 1st L.	56.1	10.0	23.5	37.1	50.9	4.0	17.7	16 38 37.04	+ 0.21	+ 67.47	.38	16 40 12.10	. . .	
	19	η Ophiuchi	..	46.0	59.4	11.9	25.0	38.0	51.0	17 1 18.55	— 6.30	. .	.39	17 1 39.63	6.98	
	20	α Herculis	..	49.5	3.0	16.0	28.2	41.0	54.0	17 7 21.95	— 6.22	. .	.41	17 7 43.12	5.41	
	21	β Lyræ	16.0	31.5	46.0	1.0	16.0	31.0	46.0	18 44 1.07	+ 0.31	. .	.41	18 44 28.79	3059	
	22	ζ Aquilæ	19.5	33.0	45.0	58.0	11.0	24.0	37.0	18 57 58.21	.27	. .	.42	18 58 25.89	5.09	
	23	δ Aquilæ	45.0	58.0	10.0	22.5	35.0	47.4	0.0	19 17 22.56	.25	. .	.42	19 17 50.23	5.77	
	24	γ Aquilæ	56.1	9.2	22.0	34.5	47.0	0.0	13.0	19 38 34.54	.26	. .	.42	19 39 2.22	5.29	
	25	α Aquilæ	16.2	29.5	42.0	54.4	7.0	20.0	33.0	19 42 54.59	.26	. .	.42	19 43 22.27	5.48	
	26	η Sagittæ	18.0	32.0	44.4	57.3	11.0	24.8	38.2	19 57 57.96	+ 0 0.28	. .	.43	19 58 25.67	+ 4.70	
	27	λ Ursæ Minoris	..	..	..	46.0	14.0	45.0	26.0	20 31 32.75	—15 30.77	. .	.43	20 16 29.41	— 327.44	
24	28	Sun, 1st L.	8.0	21.5	34.5	48.0	1.0	14.5	28.0	8 11 47.93	+ 0 0.19	. .	.53	8 13 22.89	. . .	
	29	Sun, 2d. L.	22.3	36.0	49.0	2.1	15.5	29.0	43.0	8 14 2.41	.19	. .	.53			
	30	Herculis (5666)	32.0	46.3	1.0	15.0	29.5	44.0	58.5	16 44 15.19	.25	. .	.61	16 44 43.05	+ 0 4.55	
	31	Herculis (5747)	47.0	1.2	17.0	32.0	47.0	2.0	17.2	16 55 31.91	+ 0.28	. .	.61	16 55 59.80	4.15	
	32	η Ophiuchi	..	..	59.0	12.0	25.2	38.0	51.0	17 1 25.04	— 12.92	. .	.61	17 1 39.73	6.99	
	33	α Herculis	36.4	49.3	..	15.2	28.0	41.0	54.0	17 7 17.32	2.01	. .	.61	17 7 42.92	5.42	
	34	ϑ Ophiuchi	..	..	59.0	12.5	26.3	40.3	54.0	17 12 26.42	— 13.77	. .	.61	17 12 40.26	7.43	
	35	α Ophiuchi	47.0	0.0	12.5	25.0	38.0	41.0	4.0	17 27 25.36	+ 0.15	. .	.61	17 27 53.12	5.44	
	36	Moon, 1st L.	34.0	48.0	1.0	14.5	28.0	42.0	55.8	17 36 14.76	— .02	+ 68.88	.62	17 37 51.24	. . .	
	37	β Lyræ	16.4	32.0	46.2	1.0	16.0	31.0	46.0	18 44 1.23	+ .27	. .	.62	18 44 29.12	3.60	
	38	ζ Aquilæ	19.2	33.0	45.0	58.0	10.9	24.1	37.0	18 57 58.17	.15	. .	.62	18 58 25.95	5.09	
	39	γ Aquilæ	56.3	9.3	22.0	34.0	47.0	0.0	13.0	19 38 34.51	.13	. .	.63	19 39 2.27	5.28	
	40	α Aquilæ	16.5	30.3	42.0	54.2	6.8	20.0	33.0	19 42 54.69	.12	. .	.63	19 43 22.44	5.48	
	41	β Aquilæ	45.5	58.5	11.2	23.0	36.0	48.5	1.0	19 48 23.39	.11	. .	.64	19 48 51.14	5.54	
	42	a^2 Capricorni	30.5	44.0	56.0	9.0	22.0	35.0	48.0	20 9 9.21	.02	. .	.64	20 9 36.87	6.52	
	43	γ Cygni	31.0	47.4	3.2	19.5	36.0	52.0	9.0	20 16 19.73	.33	. .	.64	20 16 47.70	3.01	
	44	Cygni (7061)	42.0	58.4	14.0	29.5	45.3	1.0	17.4	20 21 29.66	.31	. .	.64	20 21 57.61	3.22	
	45	Cygni (7114)	51.2	8.0	24.0	40.3	57.2	13.0	30.0	20 28 40.53	.33	. .	.64	20 29 8.50	2.98	
	46	Cygni (7253)	34.5	51.0	8.0	25.4	43.0	0.5	18.0	20 47 25.77	.37	. .	.65	20 47 53.79	2.74	
	47	61^1 Cygni	51.0	7.0	22.4	38.0	54.0	10.0	26.0	20 59 38.34	.31	. .	.65	21 0 6.30	4.31	
	48	ζ Cygni	18.0	32.5	47.0	1.0	15.0	30.0	44.0	21 6 1.07	.25	. .	.65	21 6 28.97	+ 4.26	
	49	α Cephei	12.0	29.0	5.0	31.0	58.0	25.0	52.0	21 14 31.71	.64	. .	.65	21 15 0.00	— 0.15	
	50	β Aquarii	27.4	41.0	53.0	5.3	18.0	30.4	43.2	21 23 5.47	.05	. .	.65	21 23 33.17	+ 6.22	
	51	ε Pegasi	37.5	50.1	3.0	15.5	28.2	41.0	54·0	21 36 15.61	.12	. .	.65	21 36 43.38	5.60	
	52	α Aquarii	53.2	5.3	18.0	30.5	..	56.0	8.0	21 57 28.50	+ 0 2.14	. .	+ 27.66	21 57 58.30	+ 0 6.07	

TE.	CLOCK. At 17h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
21	s 26.51	10.011			
23	27.38	.010	+02.37	+0.106	0.000
24	s 27.61	10.010			

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
July 24	1	Aquarii (7722)	23.2	36.5	49.0	1.5	14.5	27.0	40.5	22 3 1.74	+ 0 0.02	. . .	+ 27.66	22 3 29.42	+0 6.47	B.
	2	Neptune	..	15.0	27.5	40.0	53.0	6.0	19.0	22 7 46.75	— 6.38	. . .	.66	22 8 8.03	. .	
27	3	Sun, 2d L.	13.5	27.1	40.0	53.2	6.5	20.0	33.5	8 25 53.40	+ .18	— 67.04	.50	8 25 14.04	. .	
	4	α Scorpii	56.2	10.3	24.0	38.0	52.0	6.0	20.0	16 19 38.07	— .06	. . .	27.41	16 20 5.42	7.60	
	5	ε Herculis	17.3	32.5	46.9	1.2	15.8	30.8	45.6	16 54 1.44	+ .26	. . .	26.90	16 54 28.60	4.42	K.
	6	Herculis (5788)	25.6	41.4	56.5	11.7	27.3	42.8	58.6	17 2 11.99	.30	. . .	.90	17 2 39.19	3.92	
	7	α Herculis	37.0	50.4	3.0	15.9	28.8	41.9	54.9	17 7 15.99	.16	. . .	.90	17 7 43.05	5.44	
	8	γ Ophiuchi	35.2	47.8	59.8	12.4	25.3	37.9	50.6	17 50 12.71	+ 0.03	. . .	.86	17 50 39.60	6.84	
	9	β Capricorni	..	35.3	48.0	0.9	13.9	27.0	40.3	20 12 7.57	— 6.51	. . .	.77	20 12 27.83	6.59	
	10	Moon, 2d L.	16.2	29.6	42.6	55.5	9.1	22.4	36.1	20 39 55.93	+ 0.01	— 69.28	.75	20 39 13.40	. .	
	11	μ Aquarii	22.2	35.3	47.5	0.3	12.6	24.7	38.7	20 44 0.19	.03	. . .	26.75	20 44 26.97	6.30	
	12	α Canis Majoris	18.7	32.0	45.1	58.1	10.8	23.7	37.0	6 37 57.91	.00	. . .	27.04	6 38 24.95	7.39	B.
28	13	δ Ophiuchi	18.0	30.4	43.0	55.3	8.0	20.3	33.3	16 5 55.47	+ .10	. . .	.02	16 6 22.39	6.65	
	14	α Scorpii	56.5	11.0	24.5	38.2	52.1	6.1	20.2	16 18 38.37	— .06	. . .	.02	16 19 5.33	7.61	
	15	Herculis, (5546)	8.0	24.0	40.2	55.8	11.5	27.6	44.0	16 27 55.87	+ .32	. . .	.02	16 28 23.21	4.15	
	16	η Herculis	25.4	42.2	58.0	14.0	30.0	46.2	3.0	16 37 14.11	.32	. . .	.02	16 37 41.43	3.94	
	17	Herculis (5693)	0.8	16.3	30.1	45.0	59.5	14.4	29.8	16 46 45.13	.26	. . .	.02	16 47 13.41	4.42	
	18	ε Herculis	17.2	32.5	46.7	1.1	15.8	30.3	45.4	16 54 1.29	0.26	. . .	.02	16 54 28.57	+ 4.43	
	19	ε Ursæ Minoris	42.0	18.0	50.0	21.0	55.0	29.0	..	17 0 35.83	+ 48.97	. . .	.02	17 1 51.82	— 20.76	
	20	α Herculis	..	50.0	3.0	15.8	28.5	42.1	55.1	17 7 22.42	— 6.30	. . .	.02	17 7 43.14	+ 5.45	
	21	α Ophiuchi	47.2	0.3	13.0	25.4	38.3	51.5	4.2	17 27 25.70	+ 0.15	. . .	.02	17 27 52.87	5.47	
	22	α Lyræ	33.0	49.5	5.0	21.0	37.0	3.5	9.2	18 30 21.17	.32	. . .	.02	18 30 48.41	3.14	
	23	β Lyræ	17.0	32.2	46.7	1.3	16.2	31.5	46.5	18 44 1.63	.27	. . .	.02	18 44 28.92	3.61	
	24	δ Aquilæ	55.5	58.5	10.4	23.0	35.0	48.2	51.2	19 17 23.11	.10	. . .	.02	19 17 50.23	5.70	
	25	γ Aquilæ	57.0	10.0	22.5	35.0	47.4	0.5	13.3	19 38 35.10	.14	. . .	.02	19 39 2.26	5.27	
	26	β Aquilæ	46.0	59.0	11.3	24.1	36.5	49.0	2.0	19 47 23.99	.12	. . .	.02	19 47 51.13	5.52	
	27	a^2 Capricorni	31.1	44.1	56.8	10.0	23.0	36.0	49.1	20 9 10.00	.02	. . .	.02	20 9 37.04	6.49	
	28	α Cygni	56.2	14.0	31.5	49.0	7.0	25.0	42.0	20 35 49.24	.37	. . .	27.02	20 36 16.63	2.51	
29	29	Sun, 2d L.	5.0	18.3	31.4	44.5	58.0	11.2	25.2	8 33 44.80	+ 0.18	— 66.87	26.99	8 33 5.10	. .	
	30	a^2 Capricorni	32.4	..	..	10.9	23.8	36.7	49.8	20 9 18.72	— 7.65	. . .	.10	20 9 37.17	6.47	K.
	31	γ Cygni	32.4	49.0	5.0	21.0	37.7	53.7	10.4	20 16 21.31	+ 0.32	. . .	.10	20 16 47.73	2.99	
	32	Cygni (7067)	2.5	17.1	31.2	45.6	0.2	14.5	28.9	20 22 45.71	.25	. . .	.10	20 23 12.06	3.96	
	33	α Delphini	30.0	43.2	56.1	8.7	21.8	34.7	48.1	20 32 8.94	+ 0.16	. . .	.10	20 32 35.20	5.01	
	34	α Cygni	..	..	32.6	49.9	7.4	25.2	43.1	20 36 7.64	— 17.16	. . .	.10	20 36 16.58	2.51	
	35	μ Aquarii	23.0	36.0	48.5	0.8	13.5	26.4	39.2	20 44 1.06	+ 0.01	. . .	.10	20 44 27.17	6.27	
	36	Vulpeculæ, (7256)	57.3	11.5	25.4	39.4	53.2	7.8	21.9	20 47 39.50	+ 0.23	. . .	.10	20 48 5.83	4.25	
	37	ν Cygni	..	32.7	48.9	5.0	21.7	38.2	55.0	20 51 13.58	— 7.91	. . .	.10	20 51 31.77	3.11	
	38	γ Equulei	53.0	5.8	18.6	31.5	43.9	56.0	9.1	21 2 31.13	+ 0.12	. . .	.10	20 2 57.35	5.40	
	39	ξ Cygni	19.1	33.9	48.5	3.0	16.9	31.2	46.0	21 6 2.66	.24	. . .	.10	21 6 29.00	4.18	
	40	ν Cygni	29.1	44.6	0.1	14.9	30.1	44.8	0.3	21 11 14.84	.28	. . .	.10	21 11 41.22	3.85	
	41	Pegasi (7418)	57.9	11.3	24.8	37.9	51.1	4.0	17.6	21 14 37.80	.17	. . .	.10	21 15 4.07	4.93	
	42	β Aquarii	29.2	42.0	54.8	7.2	19.8	32.1	45.1	21 23 7.17	.03	. . .	.10	21 23 33.30	6.13	
	43	Pegasi (7520)	33.4	46.7	0.1	13.2	26.3	39.1	52.8	21 30 13.09	.19	. . .	.10	21 30 39.38	5.03	
	44	ε Pegasi	39.0	52.0	5.0	17.3	30.2	42.5	55.4	21 36 17.34	.12	. . .	.10	21 36 43.56	5.51	
	45	α Aquarii	54.6	7.3	20.1	32.7	45.2	57.0	10.3	21 57 32.46	.09	. . .	.10	21 57 48.62	5.97	
	46	Aquarii (7722)	24.9	37.9	20.9	3.6	16.4	28.9	41.9	22 2 3.50	+ 0.00	. . .	.10	22 2 29.60	6.38	
	47	Aquarii (7740)	..	..	31.8	44.4	57.0	9.7	22.8	22 3 57.14	— 12.80	. . .	.10	22 4 10.44	6.39	
	48	Neptune	..	49.7	2.3	15.1	27.9	40.3	53.3	22 7 21.43	— 6.42	. . .	.10	22 7 41.11	. .	
30	49	Sun, 1st L.	47.0	0.2	13.5	27.0	40.0	53.3	6.0	8 35 26.71	+ 0.09	. . .	.48	} 8 36 59.92	. .	B.
	50	Sun, 2d L.	0.0	13.5	27.0	40.2	53.5	16.0	29.8	8 37 40.00	.09	. . .	.48			
31	51	κ Ophiuchi	23.3	36.2	49.0	2.0	14.5	26.3	39.7	16 50 1.57	+ .05	. . .	.65	16 50 28.27	5.80	
	52	η Ophiuchi	34.0	47.1	0.2	13.2	26.2	38.5	52.0	17 1 13.03	— 0 0.06	. . .	+ 26.65	17 1 39.62	+0 7.05	

DATE.	CLOCK. At 17h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
July 27	s 26.90	g 0.037			
28	27.02	.002	+0.082	+0.292	0.000
29	s 26.10	g 0.000	+0.068	+0.309	0.000

July 28. Stars very unsteady.
30. Sun seen through clouds.

TE. 17.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
13	1	α Herculis	37.7	50.2	3.4	16.1	29.5	41.7	55.0	17 7 16.23	+ 0 0.07	. .	+ 26.65	17 7 42.95	+0 5.48	B.
	2	α Ophiuchi	47.3	0.2	13.4	26.5	39.2	51.5	4.5	17 27 26.09	.07	. .	.65	17 27 52.81	5.49	
	3	β Ophiuchi	53.4	6.5	19.0	31.5	44.0	55.7	9.2	17 35 31.33	.03	. .	.65	17 35 58.01	5.90	
	4	γ Draconis	38.5	59.0	19.0	39.5	59.5	18.5	40.0	17 52 39.14	+ .31	. .	.65	17 53 6.10	1.59	
	5	μ^1 Sagittarii	33.5	47.0	1.0	14.1	27.2	40.2	54.1	18 4 13.87	— 0.08	. .	.65	18 4 40.44	7.16	
	6	α Lyræ	..	50.0	5.0	21.2	37.0	53.3	10.0	18 31 29.42	— 7.31	. .	.65	18 31 48.26	3.16	
	7	γ Aquilæ	57.5	10.6	23.2	35.5	48.1	1.2	14.2	19 38 35.76	+ 0.05	. .	.65	19 39 2.46	5.26	
	8	α Aquilæ	17.6	30.8	43.2	55.6	8.2	21.1	33.6	19 42 55.73	0.04	. .	26.65	19 43 2.42	5.45	
2	9	* Dec. —5° 51′	14.7	27.5	39.5	52.0	..	..	..	16 42 33.42	18.89	. .	25.70	16 43 18.01	4.39	K.
	10	Ophiuchi (5688)	24.5	37.7	49.9	2.2	14.8	27.4	40.2	16 46 2.39	0.04	. .	.70	16 46 28.13	6.64	
	11	λ Herculis	29.0	42.8	56.3	10.0	23.9	38.0	52.1	17 24 10.30	+ 0.15	. .	.70	17 24 36.15	4.67	
	12	α Ophiuchi	..	..	..	26.9	39.8	52.5	5.0	17 28 46.05	— 19.08	. .	.70	17 28 52.67	5.52	
	13	ο Serpentis	48.0	1.1	13.7	26.4	39.3	52.2	5.0	17 32 26.53	+ 0.01	. .	.70	17 32 52.24	6.81	
	14	ε Aquilæ	39.1	52.3	5.1	17.8	30.7	43.7	57.1	18 52 17.97	+ 0.10	. .	.70	18 52 43.77	5.02	
	15	ζ Aquilæ	..	..	47.0	59.8	12.9	25.9	38.9	18 58 12.90	— 12.71	. .	25.70	18 58 25.89	5.10	
	16	γ Aquilæ	58.0	11.0	23.4	36.2	48.5	1.8	14.3	19 38 36.17	+ 0.09	. .	26.20	19 39 2.46	5.26	B.
	17	α Aquilæ	18.0	31.0	43.5	56.0	8.0	21.2	34.0	19 42 55.96	.08	. .	.20	19 43 22.24	5.45	
3	18	Sun, 1st L.	20.0	33.4	46.2	59.4	12.5	26.0	39.1	8 50 59.51	.11	. .	.25	} 8 52 32.31	. .	
	19	Sun, 2d L.	33.0	46.2	59.1	12.1	25.3	39.0	52.0	8 53 12.39	.11	. .	.25			
	20	α Herculis	38.0	51.0	3.6	16.1	29.5	43.0	56.0	17 7 16.74	0.10	. .	.29	17 7 43.13	5.52	
	21	α Ophiuchi	48.2	1.2	14.0	26.3	39.0	..	5.0	17 27 22.28	+ 4.37	. .	.29	17 27 52.94	5.53	
	22	γ Ophiuchi	..	..	37.0	..	2.1	15.0	28.0	17 40 5.52	— 15.57	. .	.29	17 40 16.24	5.99	
	23	Herculis (6068)	6.2	23.2	39.0	55.3	11.5	28.2	44.5	17 47 55.41	+ 0.21	. .	.29	17 48 21.91	3.23	
	24	γ Draconis	39.0	59.0	19.0	39.3	59.0	19.5	39.0	17 52 39.11	.29	. .	.29	17 53 5.69	1.65	
	25	α Lyræ	33.5	50.0	6.0	22.0	37.5	53.0	10.0	18 31 21.71	+ 0.20	. .	.29	18 31 48.20	3.20	
	26	β Lyræ	..	..	48.0	2.5	17.6	32.0	47.0	18 44 17.42	— 14.79	. .	.29	18 44 28.92	3.66	
	27	γ Aquilæ	57.0	10.2	23.0	36.5	49.0	1.6	14.1	19 38 35.91	+ 0.08	. .	.29	19 39 2.28	5.26	
	28	α^2 Capricorni	32.1	45.0	58.2	11.0	23.6	36.0	49.5	20 9 10.77	.01	. .	.29	20 9 37.07	6.46	
	29	γ Cygni	32.2	49.0	5.3	21.5	37.4	53.2	10.0	20 16 21.23	.21	. .	.29	20 16 47.73	2.98	
	30	Cygni (7067)	2.1	17.0	31.6	46.0	0.2	14.0	29.0	20 22 45.70	.16	. .	.29	20 23 12.15	3.94	
	31	α Cygni	57.2	15.0	33.0	50.4	8.0	25.0	43.0	20 35 50.23	.24	. .	.29	20 36 16.76	2.50	
	32	Cygni (7253)	35.0	52.0	10.0	28.0	45.0	1.3	19.3	20 47 27.23	.23	. .	.29	20 47 53.75	2.69	
	33	61^1 Cygni	52.0	8.2	24.0	40.0	56.0	11.3	27.5	20 59 39.71	.20	. .	.29	21 0 6.20	4.22	
	34	β Aquarii	29.0	42.0	55.0	7.5	20.0	32.0	45.0	21 23 7.21	.03	. .	.29	21 23 33.53	6.09	
	35	ε Pegasi	39.0	52.0	5.0	17.5	29.9	42.4	55.3	21 36 17.30	.08	. .	.29	21 36 43.67	5.46	
	36	α Aquarii	55.0	7.2	19.5	32.5	45.0	57.0	10.0	21 57 32.31	.05	. .	.29	21 57 58.65	5.91	
	37	Aquarii (7719)	25.0	38.0	50.5	4.0	16.4	29.0	42.0	22 2 3.56	.01	. .	.29	22 2 29.86	6.29	
4	38	Sun, 1st L.	12.0	25.0	38.5	52.0	4.8	17.6	31.0	8 54 51.06	.11	. .	.34	} 8 56 24.23	. .	
	39	Sun, 2d L.	24.5	38.0	51.1	4.3	17.0	30.0	43.1	8 57 4.00	.11	. .	.34			
5	40	Sun, 1st L.	2.9	16.4	29.3	42.7	55.9	8.5	22.0	8 58 42.53	.11	. .	.34	} 9 0 15.23	. .	
	41	Sun, 2d L.	15.2	29.0	42.2	55.4	8.2	21.0	34.3	9 0 55.04	+ .11	. .	26.34			
	42	α Scorpii	57.4	11.6	25.8	39.7	53.4	6.7	21.1	16 19 39.39	— .04	. .	25.96	16 20 5.31	7.72	K.
	43	η Serpentis	22.9	35.5	48.4	0.9	13.2	25.4	38.1	18 13 0.63	+ .04	. .	.96	18 13 26.63	6.09	
	44	Aquarii (7719)	25.1	38.1	51.2	3.9	16.6	29.1	42.0	22 2 3.71	+ 0.01	. .	.96	22 2 29.68	6.29	
	45	Aquarii (7740)	..	..	..	..	..	9.8	22.8	22 4 16.30	— 31.79	. .	.96	22 4 10.47	6.30	
	46	Neptune	56.0	9.0	22.0	34.8	47.4	59.8	12.9	22 6 34.56	+ 0.01	. .	.96	22 7 0.53	. .	
	47	π Aquarii	27.0	39.8	52.7	5.1	17.6	29.3	42.4	22 17 4.84	.06	. .	.96	22 17 30 86	5.87	
	48	ζ Pegasi	49.0	1.9	14.9	27.2	39.9	52.2	5.2	22 33 27.19	0.09	. .	.96	22 33 53.24	5.63	
8	49	α Ophiuchi	48.5	1.5	14.2	27.1	..	..	5.4	17 27 19.34	7.86	. .	.31	17 27 52.51	5.58	B.
	50	β Ophiuchi	54.4	7.2	20.0	32.5	45.0	57.0	9.9	17 35 32.29	0.22	. .	.31	17 35 57.82	5.96	
	51	γ Ophiuchi	13.0	26.0	38.4	50.9	3.1	15.3	28.0	17 39 50.67	0.22	. .	.31	17 40 16.20	6.03	
	52	Herculis (6068)	7.0	23.2	40.1	56.5	12.5	28.4	..	17 47 47.95	+ 0 8.37	. .	+ 25.31	17 48 21.63	+0 3.31	

DATE.	CLOCK. At 11h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
July 31	s 26.65	l 0.005	+0.009	+0.238	0.000
Aug. 2	25.70	g .003			
3	26.29	l .006	+0.182	+0.182	0.000
5	s 25.96	g 0.003			

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascensions.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
Aug. 8	1	β Lyræ	18.0	34.0	48.5	3.2	18.1	32.7	48.0	18 44 3.21	+ 0 0.20	. . .	+ 25.30	18 44 28.71	+0 3.70	B.
	2	ξ Aquilæ	21.5	34.5	47.8	0.3	13.0	26.0	39.0	18 58 0.31	.21	. . .	.30	18 58 25.82	5.13	
	3	δ Aquilæ	47.0	59.8	12.2	25.0	37.5	49.2	2.0	19 17 24.67	.22	. . .	.30	19 17 50.19	5.76	
	4	γ Aquilæ	58.7	11.3	24.5	37.0	49.4	2.0	15.2	19 38 36.87	.22	. . .	.30	19 39 2.39	5.26	
	5	α Aquilæ	19.0	31.8	44.0	57.0	10.0	22.0	35.0	19 42 56.97	.22	. . .	.30	19 43 22.49	5.45	
	6	β Aquilæ	48.0	0.5	13.2	26.0	38.3	50.4	3.5	19 47 25.70	.22	. . .	.30	19 47 51.22	5.50	
	7	Aquarii (7719)	26.0	39.0	52.0	4.5	17.2	29.5	42.5	22 2 4.39	.23	. . .	.30	22 2 29.92	6.25	
	8	π Aquarii	28.0	40.5	53.0	5.4	18.1	30.3	43.0	22 17 5.47	.22	. . .	.30	22 16 30.99	5.83	
	9	ξ Pegasi	49.5	3.0	15.8	28.0	40.5	53.0	6.0	22 33 27.97	0.22	. . .	25.30	22 33 53.49	5.58	
10	10	Sun, 1st L.	12.0	25.0	38.0	..	4.0	..	30.0	9 17 45.80	5.38	. . .	24.89	} 9 19 21.80	. . .	
	11	Sun, 2d L.	23.2	36.4	49.5	2.5	15.5	28.3	41.6	9 20 2.43	0.21	. . .	.89	}	. . .	
	12	δ Aquilæ	47.9	0.6	13.2	25.7	38.2	50.5	3.1	19 17 25.60	.22	. . .	.42	19 17 50.24	5.77	K.
	13	γ Aquilæ	59.4	12.4	25.2	37.8	50.4	2.8	15.9	19 38 37.70	.22	. . .	.42	19 39 2.34	5.27	
	14	α Aquilæ	19.3	32.3	45.2	57.9	10.6	22.7	35.7	19 42 57.67	.22	. . .	.42	19 42 22.31	5.45	
	15	β Aquilæ	48.7	1.4	14.0	26.8	39.1	51.2	4.4	19 47 26.51	+ 0.22	. . .	.42	19 47 51.15	5.50	
11	16	Sun, 1st L.	..	..	..	..	52.0	4.6	18.0	9 22 4.87	— 25.66	. . .	.58	} 9 23 9.52	. . .	B.
	17	Sun, 2d L.	11.3	24.3	38.0	50.7	3.5	16.2	29.2	9 23 50.46	+ 0.21	. . .	.58	}	. . .	
	18	Weisse XVI, 1033	21.5	34.0	47.0	..	..	..	..	16 53 34.17	25.62	. . .	.51	16 54 24.30	6.87	
	19	Hebe	25.3	38.3	..	..	16.2	..	41.5	16 55 0.32	3.40	. . .	.51	16 55 28.23	. . .	
	20	Weisse XVII, 83	15.0	28.0	40.3	53.1	6.1	18.3	31.3	17 4 53.16	0.23	. . .	.51	17 5 17.90	6.83	
	21	α Ophiuchi	49.3	2.2	15.0	28.1	40.5	53.0	6.2	17 27 27.76	+ 0.21	. . .	.51	17 27 52.48	5.62	
	22	γ Ophiuchi	..	26.3	39.0	51.4	4.0	16.0	29.0	17 39 37.62	— 6.06	. . .	.50	17 40 16.06	6.07	
	23	γ Draconis	40.0	0.5	21.0	41.0	0.5	20.9	41.0	17 52 40.57	+ 0.19	. . .	.50	17 53 5.26	1.84	
	24	μ¹ Sagittarii	35.0	48.5	2.0	15.3	28.5	42.0	55.5	18 4 15.26	.23	. . .	.50	18 4 39.99	7.24	
	25	κ Lyræ	21.0	37.0	52.3	8.0	23.3	38.3	54.1	18 14 7.71	.20	. . .	.50	18 14 32.41	3.62	
	26	α Lyræ	35.0	51.0	7.0	23.0	29.1	55.0	11.0	18 31 23.01	.20	. . .	.50	18 31 47.71	3.31	
	27	β Lyræ	19.0	34.1	49.3	4.1	19.1	33.3	49.0	18 44 3.99	.20	. . .	.50	18 44 28.69	3.74	
	28	ζ Aquilæ	22.2	35.0	48.0	1.0	14.0	26.3	39.8	18 58 0.90	.21	. . .	.50	18 58 25.61	5.15	
	29	δ Aquilæ	47.4	0.3	13.1	25.5	38.0	50.2	3.1	19 17 25.37	.22	. . .	.50	19 17 50.09	5.77	
	30	γ Aquilæ	59.2	12.0	25.0	38.0	49.5	2.2	15.5	19 38 37.24	.22	. . .	.50	19 39 2.06	5.27	
	31	α Aquilæ	19.3	32.1	45.1	58.0	10.2	22.6	35.5	19 42 57.54	.22	. . .	.50	19 43 22.26	5.46	
	32	β Aquilæ	48.5	1.4	14.1	26.5	39.0	51.3	4.0	19 47 26.40	.22	. . .	.50	19 47 51.12	5.51	
	33	α² Capricorni	33.5	46.4	59.2	12.5	25.4	37.5	51.0	20 9 12.21	+ 0 0.23	. . .	.49	20 9 36.92	+0 6.54	
	34	λ Ursæ Minoris	..	4.0	39.0	8.0	25.0	40.0	26.0	20 21 13.57	— 5 15.56	. . .	.48	20 16 22.60	—3 20.92	
	35	61¹ Cygni	53.5	9.4	26.0	42.0	57.5	12.5	29.2	28 59 41.44	+ 0.24	. . .	.48	21 0 6.16	+0 4.18	
	36	ζ Cygni	..	35.3	50.0	4.5	19.0	33.0	47.6	21 6 11.57	— 6.78	. . .	.48	21 6 29.27	+ 4.12	
	37	α Cephei	15.0	42.0	9.3	35.5	1.5	27.5	55.0	21 14 35.11	+ 0.27	. . .	.48	21 14 59.86	— 0.29	
	38	β Aquarii	30.7	43.3	56.4	9.0	21.2	33.5	46.4	21 23 8.64	.22	. . .	.48	21 23 33.34	+ 6.02	
	39	Aquarii (7719)	26.5	39.4	52.3	5.2	18.0	30.5	43.5	22 2 5.06	0.21	. . .	.47	22 2 29.74	6.22	
	40	Weisse XXII, 105	45.0	58.1	11.0	..	..	..	..	22 4 58.03	25.91	. . .	.47	22 5 48.41	6.19	
	41	Neptune	21.0	34.0	47.0	0.0	12.5	25.0	38.0	22 5 59.64	0.23	. . .	.47	22 6 24.37	. .	
12	42	ε Delphini	54.9	8.0	20.7	33.0	46.0	58.4	11.3	20 25 33.19	.16	. . .	.28	20 25 57.63	5.20	
	43	α Cygni	59.0	17.0	35.0	52.3	10.0	27.0	45.0	20 35 52.19	.21	. . .	.28	20 36 16.68	2.50	
	44	μ Aquarii	24.5	37.4	50.0	3.0	15.5	28.0	41.0	20 44 2.76	.14	. . .	.28	20 44 27.18	6.15	
	45	Aquarii (7309)	0.0	13.0	25.3	38.0	50.0	3.0	15.5	20 55 37.83	.15	. . .	.27	20 56 2.25	5.95	
	46	61¹ Cygni	54.0	10.0	26.0	42.0	58.0	13.3	29.4	20 59 41.81	.20	. . .	.27	21 0 6.28	4.18	
	47	ζ Cygni	21.0	36.0	50.3	5.0	19.0	33.0	48.0	21 6 4.61	.19	. . .	.27	21 6 29.07	+ 4.11	
	48	α Cephei	15.0	42.4	9.0	36.0	2.0	28.0	55.0	21 14 35.34	.26	. . .	.27	21 14 59.87	— 0.28	
	49	β Aquarii	31.2	44.0	56.5	9.2	21.5	34.0	47.0	21 23 9.06	.14	. . .	.26	21 23 33.46	+ 6.01	
	50		23.2	36.0	49.0	2.0	14.3	27.0	40.0	22 0 1.79	.14	. . .	.26	22 0 26.19	6.18	
	51	Aquarii (7719)	27.0	40.0	53.0	5.4	18.4	31.0	44.0	22 2 5.54	0 14	. . .	.26	22 2 29.94	+0 6.21	
	52	Neptune	15.0	28.0	41.0	54.0	..	19.0	..	22 5 43.40	+ 0 10.39	. . .	+ 24.25	22 6 18.04	. . .	

DATE.	CLOCK. At 18h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Aug. 8	s 25.31	g 0.002			
10	24.42	.009			
11	24.50	.009	+0.221	−0.026	0.000
12	s 24.31	g 0.009	+0.154	+0.058	0.000

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
Aug. 12	1	π Aquarii	29.0	41.8	54.4	7.0	19.3	31.0	44.0	22 17 6.64	+0 0.15	. .	+ 24.25	22 17 31.04	+0 5.78	B.
	2	ζ Pegasi	49.7	3.6	16.2	29.0	41.7	54.0	7.0	22 33 28.74	.16	. .	.24	22 33 53.14	5.53	
	3	α Pegasi	9.0	22.0	35.0	48.0	0.5	13.0	26.2	22 56 47.67	.17	. .	.24	22 57 12.08	5.50	
	4	Sun, 1st L.	34.5	47.9	0.5	14.0	26.5	39.0	52.5	9 29 13.56	.19	. .	.22	} 9 30 43.47	. .	
	5	Sun, 2d L.	45.4	58.5	12.0	24.5	38.0	50.0	3.5	9 31 24.56	.19	. .	24.22			
	6	δ Aquilæ	48.3	1.3	13.7	26.4	39.0	51.0	4.0	19 17 26.24	.19	. .	23.82	19 17 50.25	5.79	
	7	γ Aquilæ	0.1	13.0	26.0	38.4	51.3	3.5	17.0	19 38 38.47	.19	. .	.81	19 39 2.47	5.28	
	8	α Aquilæ	20.0	33.0	46.0	59.0	11.0	23.3	36.1	19 42 58.34	.19	. .	.80	19 43 22.33	5.47	
	9	β Aquilæ	49.0	2.3	15.0	27.4	40.0	52.3	5.0	19 47 27.29	.19	. .	.80	19 47 51.28	5.52	
	10	α^2 Capricorni	34.1	47.5	0.5	13.5	26.0	39.0	52.0	20 9 13.23	.18	. .	.79	20 9 37.20	6.44	
	11	β Delphini	23.0	36.0	49.0	2.0	14.7	27.0	40.5	20 30 1.74	.19	. .	.77	20 30 25.70	5.03	
	12	α Cygni	59.2	17.2	35.0	53.0	10.3	27.3	55.4	20 35 52.49	.20	. .	.77	20 36 16.46	2.51	
	13	μ Aquarii	25.3	38.0	51.0	3.2	16.0	28.4	41.5	20 44 3.34	.18	. .	.76	20 44 27.28	6.14	
	14	Vulpeculæ (7275)	25.1	38.4	52.3	5.5	19.1	32.1	46.0	20 51 5.50	.19	. .	.75	20 51 29.44	4.58	
	15	61^1 Cygni	54.0	10.5	27.0	43.0	58.5	13.2	30.0	20 59 42.31	.20	. .	.75	21 0 6.26	4.18	
	16	ζ Cygni	21.8	36.5	51.0	5.1	19.3	33.0	48.5	21 6 5.03	.20	. .	.75	21 6 28.98	+ 4.11	
	17	α Cephei	16.0	43.0	10.0	36.0	2.7	28.5	56.0	21 14 36.03	.22	. .	.74	21 14 59.99	— 0.28	
	18	β Aquarii	31.5	44.4	57.0	9.5	22.0	34.5	47.3	21 23 9.46	.18	. .	.73	21 23 32.37	+ 6.00	
	19	ϵ Pegasi	41.4	54.3	7.0	20.1	32.2	44.4	58.0	21 36 19.63	.19	. .	.73	21 36 43.55	5.37	
	20	Aquarii (7719)	27.5	40.2	53.1	6.0	18.8	31.5	44.5	22 2 5.94	.18	. .	.71	22 2 29.83	6.20	
	21	ζ Pegasi	51.9	4.4	17.0	29.5	42.3	54.5	7.5	22 33 29.59	.19	. .	23.69	22 33 53.47	5.52	
14	22	ζ Aquilæ	24.0	37.0	50.2	3.0	15.8	28.3	41.0	18 58 2.76	.19	. .	22.85	18 58 25.80	5.17	
	23	δ Aquilæ	49.3	2.1	14.5	27.2	39.7	52.0	4.7	19 17 27.06	.19	. .	.84	19 17 50.09	5.79	
	24	γ Aquilæ	1.0	13.8	26.5	39.2	52.0	4.5	17.5	19 38 39.21	.19	. .	.83	19 39 2.23	5.29	
	25	α Aquilæ	21.3	34.2	47.0	59.6	12.0	24.3	37.4	19 42 59.40	.19	. .	.82	19 43 22.41	5.47	
	26	β Aquilæ	50.1	3.0	15.5	28.3	41.0	53.2	5.8	19 47 28.13	+ 0.19	. .	22.82	19 47 51.14	5.52	
18	27	Sun, 1st L.	..	..	51.0	4.0	..	29.5	43.0	9 48 16.87	— 12.79	. .	18.42	} 9 49 27.71	. .	
	28	Sun, 2d L.	..	..	..	14.5	27.2	40.0	53.1	9 50 33.70	— 19.20	. .	18.42			
	29	ζ Aquilæ	29.0	42.0	55.1	8.0	21.0	33.1	46.2	18 58 7.77	+ 0.07	. .	17.98	18 58 25.82	5.20	
	30	δ Aquilæ	54.5	7.0	19.4	32.3	45.1	57.0	10.0	19 17 32.19	.02	. .	.97	19 17 50.18	5.82	
	31	σ Aquilæ	45.5	58.3	11.2	24.0	36.4	48.5	1.5	19 31 23.63	.03	. .	.96	19 31 41.62	5.63	
	32	γ Aquilæ	6.0	19.0	31.8	44.5	57.0	9.4	22.5	19 38 44.31	.05	. .	.96	19 39 2.32	5.31	
	33	α Aquilæ	25.9	38.9	52.0	4.7	17.0	29.2	42.2	19 43 4.27	.05	. .	.95	19 43 22.27	5.49	
	34	β Aquilæ	55.0	8.0	20.7	33.3	45.8	58.0	11.0	19 47 33.11	+ .04	. .	.95	19 47 51.10	5.54	
	35	α^2 Capricorni	40.3	53.5	6.3	19.0	32.0	44.5	58.0	20 9 19.09	— .04	. .	.94	20 9 36.99	6.44	
	36	α Cygni	5.5	23.0	41.0	59.0	16.0	33.0	51.0	20 35 58.36	+ .24	. .	.92	20 36 16.52	2.53	
	37	Vulpeculæ (7256)	5.4	19.7	34.0	48.2	2.0	15.6	30.4	20 47 47.90	.13	. .	.90	20 48 5.93	4.19	
	38	ζ Cygni	28.0	42.2	56.4	11.0	25.5	39.3	54.3	21 6 10.96	+ .14	. .	.89	21 6 28.99	4.10	
	39	β Aquarii	37.9	50.4	3.0	16.0	28.5	40.7	53.4	21 23 15.70	— .01	. .	.88	21 23 33.57	5.97	
	40	ϵ Pegasi	47.8	0.4	13.3	26.0	38.7	51.0	4.0	21 36 25.89	+ 0.05	. .	.87	21 36 43.81	5.34	
	41	Aquarii (7719)	..	47.0	59.0	12.0	25.0	37.3	50.3	22 2 18.43	— 6.45	. .	.85	22 2 29.83	6.15	
	42	Neptune	44.0	57.0	..	33.0	..	..	..	22 5 1.33	+ 21.30	. .	.85	22 5 40.48	. .	
	43	Weisse XXII, 105	..	5.0	18.0	..	43.5	56.0	9.0	22 5 38.30	— 7.71	. .	17.85	22 5 48.44	6.12	
	44	ζ Aquilæ	30.0	43.0	56.0	9.0	21.8	34.0	47.0	18 58 8.69	+ 0.14	. .	16.92	18 58 25.75	5.21	
	45	δ Aquilæ	55.3	8.3	21.0	33.3	45.8	..	11.0	19 17 29.12	4.31	. .	.91	19 17 40.34	5.82	
	46	σ Aquilæ	47.0	59.5	12.3	25.0	37.5	50.0	2.8	19 31 24.87	0.13	. .	.90	19 31 41.90	5.52	
	47	γ Aquilæ	7.1	20.0	33.0	45.5	58.0	10.6	23.6	19 38 45.40	.14	. .	.90	19 39 2.44	5.31	
	48	α Aquilæ	27.2	40.0	53.0	5.5	18.0	30.3	43.2	19 43 5.31	.14	. .	.89	19 43 22.34	5.49	
	49	β Aquilæ	56.2	9.0	21.8	34.3	46.7	59.0	12.0	19 47 34.14	.13	. .	.89	19 47 52.16	5.54	
	50	α^2 Capricorni	41.5	54.3	7.2	20.2	33.0	45.5	59.0	20 9 20.09	+ 0.10	. .	.88	20 9 37.07	6.44	
	51	Cygni (7022)	..	58.0	14.5	31.0	47.0	3.0	19.5	20 16 38.83	— 7.97	. .	.87	20 16 47.73	3.05	
	52	ϵ Delphini	2.2	15.0	27.4	39.9	53.0	5.7	19.0	20 25 40.31	+0 0.14	. .	+ 16.86	20 25 57.31	+0 5.21	

DATE.	CLOCK. At 18h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Aug. 13	s 23.85	g 0.039	+0.186	+0.019	0.000
14	22.88	.039			
18	18.02	.042	+ .015	+ .225	.000
19	s 16.96	g 0.042	+ .026	+ .087	.000

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850 0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
Aug. 19	1	61[1] Cygni	1.2	18.0	33.3	49.0	5.0	21.0	37.2	20 59 49.24	+ 0 0.19		+16.84	21 0 6.27	+0 4.17	B.
	2	ζ Cygni	29.0	44.0	57.5	11.0	26.4	41.0	55.5	21 6 12.05	.17		.84	21 6 12.05	+ 4.10	
	3	α Cephei	23.0	50.0	16.0	42.1	9.0	36.0	3.0	21 14 42.73	.29		.83	21 14 59.85	— 0.26	
	4	β Aquarii	38.9	52.0	4.6	16.5	29.0	41.5	54.0	21 23 16.56	.12		.82	21 23 33.50	+ 5.97	
	5	ε Pegasi	48.8	1.2	13.4	26.1	39.0	52.0	5.0	21 36 26.50	.14		.81	21 36 43.45	5.34	
	6	Aquarii (7719)	34.3	47.5	0.0	12.4	25.3	38.2	51.1	22 2 12.69	.11		.79	22 2 29.59	6.14	
	7	Neptune	39.1	52.0	5.0	17.5	30.3	43.3	56.4	22 5 17.66	.11		.79	22 5 34.56	. .	
	8	ζ Pegasi	58.0	11.0	23.5	36.4	49.0	1.9	15.0	22 33 36.40	.14		16.77	22 33 53.31	5.45	
21	9	Sun, 1st L.	37.0	50.0	3.0	15.5	28.5	41.0	54.2	9 59 15.60	.12	}				
	10	Sun, 2d L.	46.5	59.7	12.7	25.4	38.2	50.9	4.0	10 1 25.34	+ 0.12	}	15.36	10 0 35.95	. .	
	11	α Lyræ	..	..	..	33.0	49.0	4.5	21.0	18 31 56.87	— 23.83		.02	18 31 48.06	3.47	
	12	ζ Aquilæ	31.2	45.0	58.0	10.5	23.4	36.0	49.3	18 58 10.49	+ 0.13		15.00	18 58 25.62	5.24	
	13	δ Aquilæ	..	10.0	22.6	35.5	48.2	0.0	12.5	19 17 41.47	— 6.18		14.99	19 17 50.28	5.84	
	14	γ Aquilæ	8.9	22.0	34.6	47.2	0.0	12.3	25.3	19 38 47.19	+ 0.12		.98	19 39 2.29	5.33	
	15	α Aquilæ	29.0	42.0	55.0	7.0	19.3	32.0	45.0	19 43 7.04	.11		.97	19 43 22.12	5.51	
	16	β Aquilæ	58.1	11.0	23.6	36.0	48.5	1.0	13.8	19 47 36.00	.11		14.97	19 47 51.08	5.56	
23	17	Sun, 1st L.	1.9	14.3	27.5	40.0	53.3	5.5	18.5	10 6 40.14	.12	}				
	18	Sun, 2d L.	11.2	24.2	37.1	50.0	2.6	15.0	28.0	10 8 49.73	.12	}	13.07	10 7 58.12	. .	
25	19	Sun, 1st L.	24.3	37.2	50.0	2.8	15.5	27.8	41.0	10 14 2.66	0.13	}				
	20	Sun, 2d L.	..	46.2	59.2	..	..	..	..	10 15 52.70	19.14	}	12.86	10 15 20.11	. .	
	21	α Lyræ	46.5	3.0	19.2	35.3	51.0	6.3	23.0	18 31 34.90	0.19		.70	18 31 47.79	3.55	
	22	β[1] Lyræ	30.8	46.0	1.0	16.0	31.0	45.0	0.4	18 44 15.74	.18		.69	18 44 28.61	3.95	
	23	ζ Aquilæ	34.0	47.0	0.2	13.0	26.0	38.3	51.4	18 58 12.84	.13		.69	18 58 25.66	5.28	
	24	δ Aquilæ	59.5	12.1	25.0	37.3	50.0	2.2	15.0	19 17 37.30	.11		.68	19 17 50.09	5.88	
	25	γ Aquilæ	11.1	24.0	37.0	49.7	21.0	14.3	27.3	19 38 49.20	.12		.68	19 39 2.00	5.37	
	26	β Aquilæ	0.3	13.0	26.0	38.3	51.0	3.0	16.0	19 47 38.23	.12		.67	19 47 51.02	5.58	
	27	α[2] Capricorni	45.8	58.5	11.3	24.5	37.5	49.5	2.7	20 9 24.26	.08		.67	20 9 37.01	6.47	
	28	α Cygni	10.4	28.0	46.0	3.7	21.0	38.0	56.0	20 36 3.30	.21		.66	20 36 16.17	2.59	
	29	61[1] Cygni	5.5	22.0	37.9	54.0	9.1	25.0	41.2	20 59 53.53	.19		.65	21 0 6.37	4.19	
	30	ζ Cygni	33.0	47.5	2.2	16.3	31.0	44.9	59.0	21 6 16.27	.17		.65	21 6 29.09	+ 4.12	
	31	α Cephei	27.0	54.0	21.0	47.2	13.5	39.7	7.0	21 14 47.06	.20		.64	21 14 59.90	— 0.21	
	32	β Aquarii	43.0	55.5	8.1	21.0	33.3	46.0	58.3	21 23 20.74	.09		.64	21 23 33.47	+ 5.96	
	33	γ Capricorni	47.6	1.0	14.2	27.2	40.2	53.0	6.3	21 31 27.07	.07		.64	21 31 39.78	6.38	
	34	μ Capricorni	8.2	22.0	34.5	48.0	0.5	13.3	26.3	21 44 47.53	.07		.64	21 45 0.24	6.25	
	35	Aquarii (7719)	38.4	51.5	4.4	17.2	30.0	42.2	55.3	22 2 17.00	.08		.63	22 2 29.71	6.06	
	36	Neptune	6.0	18.8	21.2	44.0	57.3	9.5	22.5	22 4 44.19	.08		.63	22 4 56.90	. .	
	37	Moon, 1st L.	59.0	12.0	25.0	38.0	51.0	3.4	16.4	22 8 37.83	.09	}				
	38	Moon, 2d L.	18.1	31.4	45.0	57.9	10.5	23.1	36.2	22 10 57.46	.09	}	.63	22 10 0.36	. .	
	39	λ Aquarii	50.1	3.0	16.0	29.0	41.2	53.0	6.0	22 44 28.33	.09		.61	22 44 41.03	5.89	
	40	Saturn, 1st L.	44.5	..	10.5	..	36.0	..	1.0	22 49 23.00	.06	}				
	41	Saturn, 2d L.	..	59.0	..	24.5	..	49.2	..	22 49 24.23	.11	}	.61	22 49 23.70		
26	42	μ[1] Sagittarii	47.5	1.0	14.5	28.1	41.3	54.2	8.2	18 4 27.83	0.08		.24	18 4 40.15	+ 7.43	
	43	δ Ursæ Minoris	51.0	25.0	57.0	28.0	0.0	24.0	59.0	18 21 26.29	1.70		.24	18 21 40.23	— 56.51	
	44	β[1] Lyræ	31.2	46.3	1.5	16.2	31.1	45.4	1.0	18 44 16.10	0.18		.23	18 44 28.61	+ 3.96	
	45	ζ Aquilæ	34.5	47.1	0.4	13.2	26.2	39.0	52.0	18 58 13.20	.14		.23	18 58 25.57	5.30	
	46	δ Aquilæ	0.0	13.0	25.7	38.0	50.4	2.2	15.2	19 17 37.79	.12		.22	19 17 50.13	5.89	
	47	γ Aquilæ	11.2	24.7	37.2	50.0	3.0	15.0	28.0	19 38 49.87	+ 0.14		.22	19 39 2.23	5.37	
	48	α Aquilæ	..	..	..	..	..	35.0	48.0	19 43 41.50	— 31.37		.21	19 43 22.34	5.55	
	49	β Aquilæ	1.0	13.4	26.2	39.9	51.5	3.2	16.2	19 47 38.64	+ 0.13		.21	19 47 50.98	5.59	
	50	α[2] Capricorni	46.0	59.1	12.0	25.2	37.9	50.2	3.3	20 9 24.81	0.10		.20	20 9 37.11	6.48	
	51	Aquarii (7719)	39.0	52.0	5.0	18.0	30.1	43.0	56.0	22 2 17.66	.10		.17	22 2 29.95	+0 6.05	
	52	Neptune	0.2	13.0	26.0	38.7	51.6	4.0	17.0	22 4 38.64	+ 0.10		+ 12.17	22 4 50.91	. .	

DATE.	CLOCK. At 18h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Aug. 21	s 15.04	g 0.040			
25	12.72	.024	+0.103	+0.115	0.000
26	s 12.24	g 0.024	+0.120	+0.094	0.000

ATE. 847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
ıg. 26	1	ϑ Aquarii	58.3	11.2	24.0	37.0	49.3	1.4	14.4	22 8 36.51	+ 0 0.11		+ 12.17	22 8 48.79	+0 5.97	B.
	2	ζ Pegasi	3.0	16.0	28.6	41.0	54.0	6.3	19.0	22 33 41.13	.14		.16	22 33 53.43	5.39	
	3	λ Aquarii	51.0	3.9	16.2	29.0	41.8	54.0	7.0	22 44 28.99	.11		.16	22 44 41.26	5.89	
	4	Moon, 2d L.	19.2	32.2	45.2	58.1	10.9	23.2	37.0	23 10 57.97	.11	— 69.42	.15	23 10 0.81	. .	
	5	λ Piscium	28.0	40.9	53.0	5.6	18.1	30.3	43.0	23 34 5.56	.12		12.14	23 34 17.82	5.89	
27	6	Sun, 2d L.	54.0	7.2	20.2	33.1	45.7	58.0	10.9	10 23 32.73	.14	— 64.61	11.93	10 22 40.19	. .	
30	7	Sun, 1st L.	43.0	56.0	8.8	21.5	34.1	46.5	59.4	10 32 21.33	.13		10.88	10 33 36.81	. .	
	8	Sun, 2d L.	52.0	5.0	17.8	..	43.0	55.3	8.4	10 34 30.25	.15					
	9	α Aquarii	10.6	23.3	36.2	48.8	0.9	13.0	25.8	21 57 48.37	.11		.36	21 57 58.84	5.70	K.
	10	Aquarii (7719)	40.8	53.8	6.7	19.6	32.3	44.7	57.8	22 2 19.39	+ 0.09		.36	22 2 29.84	6.04	
	11	Neptune	..	49.8	2.6	15.3	28.2	40.8	53.8	22 4 21.75	— 6.34		.36	22 4 25.77	. .	
	12	ζ Pegasi	4.8	17.6	30.4	43.1	55.7	8.0	21.3	22 34 42.99	+ 0.18		.36	22 34 53.53	5.37	
	13	Saturn, 1st L.	..	..	..	..	13.3	25.9	38.6	22 48 25.93	— 25.19	+ 0.63	.36	22 48 11.73	. .	
	14	α Pegasi	22.8	35.9	49.0	1.9	14.7	27.1	40.2	22 57 1.66	+ 0.19		.36	22 57 12 21	5.29	
31	15	Sun, 1st L.	21.7	34.5	47.4	0.2	12.8	25.0	38.0	10 35 59.94	.13		.64	10 37 15.11	. .	B.
	16	Sun, 2d L.	30.3	43.2	56.3	9.0	21.4	34.0	47.0	10 38 8.74	.13					
	17	μ^1 Sagittarii	49.1	2.5	16.1	29.5	43.0	56.0	9.3	18 4 29.36	0.07		.56	18 4 39.99	+ 7.51	
	18	δ Ursæ Minoris	50.0	24.0	57.0	29.0	59.0	23.0	0.0	18 21 26.00	1.86		.56	18 21 38.42	— 54.98	
	19	β^1 Lyræ	32.5	48.1	2.7	18.0	33.2	47.2	2.1	18 44 17.69	0.18		.56	18 44 28.43	+ 4.05	
pt. 1	20	Sun, 1st L.	0.0	12.9	26.0	38.6	51.0	3.3	16.4	10 39 38.31	.13		.41	10 40 53.19	. .	
	21	Sun, 2d L.	8.5	21.8	34.4	47.2	0.0	12.0	25.1	10 41 47.00	.13					
	22	β Lyræ	33.0	48.2	3.2	18.3	33.0	47.7	3.0	18 44 18.06	.18		.33	18 44 28.57	4.07	
	23	ζ Aquilæ	36.5	49.4	2.2	15.3	28.1	40.3	53.5	18 58 15.04	.14		.33	18 58 25.51	5.38	
	24	δ Aquilæ	2.1	15.0	27.0	40.0	52.3	4.4	17.2	19 17 39.71	.12		.32	19 17 50.15	5.96	
	25	μ Aquilæ	51.5	4.3	17.0	29.3	42.2	54.4	7.5	19 26 29.46	.13		.32	19 26 49.91	5.63	
	26	γ Aquilæ	13.5	26.5	39.1	52.0	4.5	16.8	30.0	19 38 51.77	.13		.32	19 39 2.22	5.44	
	27	α Aquilæ	33.5	46.2	59.3	12.1	24.2	37.0	49.8	19 43 11.74	.13		.32	19 43 22.19	5.61	
	28	β Aquilæ	2.2	15.5	28.3	41.1	53.2	5.6	18.2	19 47 40.59	.12		.32	19 47 51.03	5.65	
	29	α^2 Capricorni	48.0	1.0	14.2	27.0	39.8	52.3	5.3	20 9 26.80	.09		.31	20 9 37.20	6.52	
	30	ε Delphini	8.5	21.8	34.4	47.2	0.0	12.2	25.3	20 25 47.06	.13		.31	20 25 57.50	5.26	
	31	α Cygni	13.0	30.8	49.0	6.3	23.8	41.0	59.0	20 36 6.13	.21		.31	20 36 16.65	2.66	
	32	μ Aquarii	38.8	51.5	4.3	17.0	29.5	42.0	55.0	20 44 16.87	.09		.31	20 44 27.27	6.17	
	33	61^1 Cygni	8.0	24.3	40.1	56.0	12.0	27.5	43.3	20 59 55.89	.19		.31	21 0 6.29	4.24	
	34	ζ Cygni	35.4	50.0	4.4	19.0	33.3	47.1	2.0	21 6 18.74	.17		.30	21 6 29.21	+ 4.15	
	35	α Cephei	29.0	56.0	23.0	49.7	16.0	42.0	9.0	21 14 49.24	.20		.30	21 14 59.74	— 0.11	
	36	β Aquarii	45.2	58.1	11.0	23.7	36.0	48.0	1.0	21 23 23.29	.10		.30	21 23 43.69	+ 5.96	
	37	ε Pegasi	55.0	8.0	21.0	33.4	46.0	58.2	11.3	21 36 33.27	.13		.30	21 36 43.70	5.33	
	38	Weisse XXI, 1398	37.2	50.3	3.1	16.0	28.5	41.0	54.3	22 0 15.77	.09		.29	22 0 26.15	6.04	
	39	Aquarii, (7719)	41.0	54.0	7.0	19.5	32.3	45.0	58.0	22 2 19.54	.09		.29	22 2 29.92	6.04	
	40	Neptune	24.5	37.3	50.5	3.4	16.0	28.6	41.5	22 4 3.11	.09		.29	22 4 13.49	. .	
	41	ζ Pegasi	4.8	17.7	30.5	43.3	56.0	8.3	21.1	22 33 43.10	.13		.29	22 33 53.52	5.36	
	42	Saturn, 1st L.	48.5	..	14.2	..	39.5	..	5.0	22 47 26.80	.09		.29	22 47 37.78	. .	
	43	Saturn, 2d L.	..	2.5	..	28.5	..	53.0	..	22 47 28.00	.09					
	44	α Pegasi	22.4	36.0	49.0	2.0	14.5	27.0	40.3	22 57 1.60	.14		.29	22 57 12.03	5.28	
2	45	Sun, 1st L.	38.4	51.0	4.0	16.5	29.1	41.3	54.3	10 43 16.37	.13		10.14	10 44 30.81	. .	
	46	Sun, 2d L.	46.5	59.4	12.3	25.0	37.3	50.0	2.5	10 45 24.71	+ .13					
	47	β Lyræ	..	..	..	18.9	..	..	..	18 44 18.90	— .01		9.64	18 44 28.53	4.09	K.
	48	ζ Aquilæ	36.9	50.0	2.8	15.8	28.7	41.2	54.6	18 58 15.71	+ .14		.64	18 58 25.49	5.39	
	49	δ Aquilæ	2.6	15.2	27.9	40.5	52.8	5.0	17.8	19 17 40.24	.12		.64	19 17 50.00	5.98	
	50	α Aquilæ	34.1	46.9	59.9	12.5	24.9	37.2	50.2	19 43 12.24	.13		.63	19 43 22.00	5.62	
	51	ζ Cygni	35.9	50.4	5.3	19.6	34.0	47.7	2.4	21 6 19.33	+ 0 0.17		+ 9.63	21 6 29.13	+0 4.16	
	52															

DATE.	CLOCK. At 18h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Aug. 30	s 10.40	g 0.010			
31	10.56	.010	+0.112	+0.104	0.000
Sept. 1	10.34	.009	+0.113	+0.103	0.000
2	s 9.65	g 0.010			

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
Sept. 3	1	Sun, 1st L.	15.8	27.5	41.3	54.0	6.7	19.0	32.0	10 46 53.76	+0 0.13	. .	+ 9.90	10 48 8.10	. .	B.
	2	Sun, 2d L.	24.2	37.1	50.1	2.6	15.0	27.3	40.4	10 49 2.39	.13	. .				
	3	μ^1 Sagittarii	49.8	3.2	16.7	30.2	43.4	36.3	10.1	18 4 29.96	0.07	. .	.83	18 4 39.86	+0 7.56	
	4	δ Ursæ Minoris	49.0	24.0	57.0	28.0	58.0	23.0	59.0	18 21 25.43	1.83	. .	.83	18 21 37.09	— 53.54	
	5	β Lyræ	33.4	48.7	3.5	18.5	33.2	48.1	3.3	18 44 18.34	0.18	. .	.82	18 44 28.34	+ 4.11	
	6	ζ Aquilæ	36.9	50.0	2.9	15.6	28.4	40.8	54.2	18 58 15.54	.14	. .	.82	18 58 25.50	5.41	
	7	δ Aquilæ	2.2	15.0	27.8	40.3	53.1	5.0	17.8	19 17 40.17	.12	. .	.82	19 17 50.11	5.99	
	8	μ Aquilæ	52.2	5.0	17.5	29.8	42.5	54.8	7.9	19 26 29.96	.13	. .	.82	19 26 39.91	5.71	
	9	γ Aquilæ	14.0	27.0	39.5	52.3	5.1	17.2	30.2	19 38 52.19	.13	. .	.82	19 39 2.14	5.46	
	10	α Aquilæ	34.0	47.0	59.9	12.4	25.1	37.2	50.1	19 43 12.24	.13	. .	.82	19 43 22.19	5.63	
	11	β Aquilæ	3.1	16.0	28.8	41.0	53.5	6.0	18.8	19 47 41.03	0.12	. .	.81	19 47 50.96	5.67	
	12	Aquarii (7719)	42.0	55.0	7.5	20.0	..	..	..	22 2 1.12	19.24	. .	.79	22 2 30.15	6.02	
	13	Neptune	12.8	26.0	39.0	51.7	4.5	16.8	30.0	22 3 51.54	0.09	. .	.79	22 4 1.42	. .	
4	14	Sun, 1st L.	53.3	6.2	18.9	31.6	44.2	56.5	9.5	10 50 31.46	.13	. .	.67	10 51 45.49	. .	
	15	Sun, 2d L.	1.9	14.5	27.5	40.2	52.4	5.0	18.0	10 52 39.93	.13					
	16	α Lyræ	50.1	6.6	22.4	38.8	54.7	10.2	26.6	18 31 38.49	+ 0.19	. .	.12	18 31 47.80	3.76	K.
	17	β Lyræ	..	..	..	19.2	34.0	48.8	4.0	18 44 41.50	— 22.23	. .	.12	18 44 28.40	4.13	
	18	ζ Aquilæ	47.4	50.7	3.6	16.4	29.2	41.7	54.9	18 58 16.27	+ 0.14	. .	.11	18 58 25.52	5.42	
	19	δ Aquilæ	2.9	15.6	28.3	40.9	53.4	5.6	18.5	19 17 40.74	+ 0.12	. .	.11	19 17 49.97	6.00	
	20	ϵ Pegasi	..	..	22.0	34.8	47.3	59.5	12.5	21 36 47.22	— 12.56	. .	.09	21 36 43.75	5.33	
	21	Aquarii (7685)	..	24.3	37.0	49.7	2.0	14.2	26.9	21 56 55.69	6.17	. .	.09	21 56 58.60	5.71	
	22	α Aquarii	..	..	..	49.3	2.3	14.4	27.3	21 58 8.32	18.64	. .	.08	21 57 58.76	5.70	
	23	Aquarii (7719)	..	..	..	20.9	33.5	46.2	59.3	22 2 39.97	19.10	. .	.08	22 2 29.95	6.07	
	24	Neptune	..	..	33.3	46.2	58.9	11.4	24.4	22 3 58.84	12.74	. .	.08	22 3 55.18	. .	
	25	Aquarii (7747)	..	..	56.8	9.9	22.8	..	..	22 5 9.83	— 0.04	. .	.08	22 5 18.87	6.04	
	26	ζ Pegasi	6.0	19.0	31.8	44.7	57.0	9.4	22.4	22 33 44.33	+ 0.13	. .	.08	22 33 53.54	+ 5.35	
	27	Saturn, 1st L.	58.8	..	24.5	..	49.8	..	15.2	22 46 37.07	.07	. .	9.07	22 46 46.83	. .	
	28	Saturn, 2d L.	..	12.8	..	38.3	..	3.3	..	22 46 38.13	.12					
6	29	Sun, 1st L.	8.0	20.5	33.5	46.0	58.5	10.5	23.5	10 57 45.79	.12	. .	8.82	10 58 58.90	. .	B.
	30	Sun, 2d L.	16.0	29.0	42.0	54.4	6.5	19.0	32.0	10 59 54.13	+ 0 0.12					
	31	Polaris	27.0	37.0	..	11.0	10.0	10.0	15.0	13 6 38.33	— 1 24.02	. .	.79	13 5 23.10	— 22.14	
	32	μ^1 Sagittarii	51.0	4.4	18.0	31.5	44.4	58.0	11.2	18 4 31.21	+ 0 0.06	. .	.71	18 4 39.98	+ 7.61	
	33	δ Ursæ Minoris	50.0	23.0	57.0	27.0	58.0	23.0	59.0	18 21 25.29	2.01	. .	.70	18 21 36.00	— 52.29	
	34	β Lyræ	34.4	49.3	5.0	19.3	34.5	49.0	4.4	18 44 19.41	0.18	. .	.70	18 44 28.29	+ 4.17	
	35	ζ Aquilæ	38.0	51.1	4.0	16.9	29.8	42.1	55.1	18 58 16.71	.07	. .	.69	18 58 25.47	5.45	
	36	δ Aquilæ	3.3	16.1	28.9	41.4	54.0	6.0	19.0	19 17 41.24	.11	. .	.69	19 17 50.04	6.03	
	37	γ Aquilæ	15.0	28.0	40.9	53.6	6.0	18.2	31.2	19 38 53.27	.12	. .	.68	19 39 2.07	5.49	
	38	α Aquilæ	35.4	48.2	0.6	13.2	26.0	38.2	51.3	19 43 13.27	.12	. .	.68	19 43 22.07	5.66	
	39	β Aquilæ	4.2	16.9	30.0	42.3	54.5	7.0	19.8	19 47 42.10	.12	. .	.68	19 47 50.90	5.70	
7	40	Venus, 1st L.	37.5	50.3	3.1	16.3	29.1	41.4	54.5	12 53 16.03	.06	+ 1.52	8.41	12 53 26.02	. .	
10	41	Sun, 1st L.	35.0	47.0	59.8	12.7	25.6	37.5	50.5	11 12 12.59	.08	. .	6.82	11 13 23.71	. .	
	42	Sun, 2d L.	43.0	56.0	8.4	21.0	33.5	46.0	59.3	11 14 21.03	.08	. .	.82			
	43	β Lyræ	36.8	51.9	6.9	21.9	36.6	51.1	6.5	18 44 21.67	.17	. .	.41	18 44 28.25	4.26	K.
	44	δ Aquilæ	5.7	18.5	31.0	43.8	56.1	8.2	21.1	19 17 43.49	.07	. .	.41	19 17 49.97	6.08	
	45	γ Aquilæ	17.2	30.3	43.1	55.7	8.4	20.8	33.7	19 38 55.60	.09	. .	.40	19 39 2.09	5.54	
	46	α Aquilæ	37.5	50.1	2.9	15.8	28.4	40.7	53.7	19 43 15.59	.09	. .	.40	19 43 22.08	5.71	
	47	β Aquilæ	6.4	19.2	31.9	44.6	57.0	9.2	22.0	19 47 44.33	.08	. .	.39	19 47 50.80	5.75	
	48	α^2 Capricorni	51.9	5.0	17.8	30.7	43.6	56.0	9.2	20 9 30.60	.03	. .	.39	20 9 37.02	6.61	
	49	61^1 Cygni	12.0	27.8	43.9	0.0	15.6	31.0	46.9	20 59 59.60	.19	. .	.37	21 0 6.16	4.32	
	50	ζ Cygni	39.1	53.8	8.2	22.6	37.0	50.9	5.7	21 6 22.47	.16	. .	.37	21 6 29.00	4.22	
	51	ϵ Pegasi	58.9	11.9	24.6	37.2	49.9	2.3	15.2	21 36 37.14	.09	. .	.36	21 36 43.59	5.35	
	52	Aquarii (7719)	45.0	57.9	11.0	23.9	36.2	48.7	1.8	22 2 23.50	+0 0.03	. .	+ 6.35	22 2 29.88	+0 6.07	

DATE.	CLOCK. At 18h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Sept. 3	s 9.83	g 0.010	+0.114	+0.102	0.000
4	9.13	.012			
6	8.71	.015	+0.113	+0.053	0.000
10	s 6.42	g 0.017	+0.064	—0.164	0.000

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
Sept. 10	1	Neptune	..	..	..	13.8	25.9	38.3	51.3	22 3 32.32	— 0 19.18	. . .	+ 6.35	22 3 19.49	. .	K.
	2	ζ Pegasi	8.8	21.9	34.5	47.2	59.9	12.2	25.2	22 33 47.10	+ 0.08	. . .	.34	22 33 53.52	+0 5.33	
	3	Saturn, 1st L.	19.4	..	45.5	..	10.8	..	36.1	22 44 57.95	.01	} . . .	6.34	22 45 4.83	. .	
	4	Saturn, 2d L.	..	33.6	..	59.2	..	24.1	..	22 44 58.97	.06	}				
13	5	γ Draconis	58.2	19.1	39.2	59.0	19.2	39.0	59.3	17 52 59.00	+ .31	. . .	5.14	17 53 4.45	2.84	B.
	6	μ^1 Sagittarii	54.4	8.0	21.5	34.9	48.2	1.3	15.0	18 4 34.76	— 0 0.10	. . .	.14	18 4 39.80	+ 7.73	
	7	δ Ursæ Minoris	48.0	22.0	56.0	27.0	56.0	21.0	..	18 19 38.33	+ 1 49.82	. . .	.14	18 21 33.29	— 49.64	
	8	α Lyræ	54.0	10.2	26.3	42.5	58.3	14.0	30.6	18 31 42.27	0 0.19	. . .	.13	18 31 47.59	+ 3.98	
	9	β^1 Lyræ	38.0	53.2	8.3	23.4	38.0	52.4	8.0	18 44 23.04	.16	. . .	.13	18 44 28.33	4.32	
	10	ζ Aquilæ	41.5	54.5	7.3	20.5	33.0	45.5	58.6	18 58 20.13	.06	. . .	.12	18 58 25.31	5.57	
	11	δ Aquilæ	7.0	19.8	32.3	45.0	57.3	9.5	22.3	19 17 44.74	.00	. . .	.12	19 17 49.86	6.13	
	12	γ Aquilæ	18.5	31.5	44.2	57.0	9.7	22.0	35.0	19 38 56.84	.04	. . .	.11	19 39 1.99	5.59	
	13	α Aquilæ	38.6	51.4	4.3	17.1	29.7	42.0	54.9	19 43 16.86	.03	. . .	.11	19 43 22.00	5.75	
	14	β Aquilæ	7.7	20.2	33.0	45.8	58.2	10.5	23.4	19 47 45.54	+ .02	. . .	.11	19 47 50.67	5.79	
	15	Neptune	18.0	31.1	44.0	57.0	9.5	22.3	35.3	22 2 56.74	— .06	. . .	5.05	22 3 1.73	. .	
14	16	Sun, 1st L.	0.0	12.8	25.5	38.2	50.0	2.5	15.5	11 26 37.79	+ .01	} . . .	4.78	11 28 6.52	. .	
	17	Sun, 2d L.	8.0	20.6	33.2	46.1	58.2	10.3	23.3	11 28 45.67	.01	}				
	18	Neptune	13.2	26.3	39.3	52.3	4.6	17.3	30.4	22 2 51.91	.02	. . .	.39	22 2 56.32	. .	K.
	19	ζ Pegasi	10.7	23.8	36.7	49.0	1.8	14.1	27.1	22 33 49.03	.09	. . .	.38	22 33 53.50	5.34	
	20	ι Piscium	26.4	38.8	51.8	4.2	16.8	28.8	41.9	23 32 4.10	.07	. . .	.36	23 32 8.53	5.60	
	21	α Andromedæ	46.1	0.4	14.9	29.0	43.1	57.0	11.1	0 0 28.80	.15	. . .	.35	0 0 33.30	5.16	
	22	γ Pegasi	42.0	55.0	8.1	21.1	33.8	46.4	59.7	0 5 20.87	.10	. . .	.35	0 5 25.32	5.44	
	23	β Ceti	13.8	27.0	40.3	53.8	6.8	19.7	33.1	0 35 53.50	+ 0.00	. . .	.34	0 35 57.84	5.67	
	24	ϑ^1 Ceti	..	..	9.0	21.7	34.2	46.3	59.7	1 16 34.18	— 12.65	. . .	.33	1 16 25.86	5.66	
	25	α Arietis	52.0	6.0	19.7	33.0	46.8	0.0	13.9	1 58 33.06	+ 0.13	. . .	.31	1 58 37.50	+ 6.24	
15	26	Venus, 1st L.	51.5	4.8	18.0	30.7	43.3	56.0	9.1	12 52 30.48	+ 0.06	+ 1.74	.36	12 52 36.64	. .	B.
	27	Polaris, S. P.	39.0	47.0	50.0	23.0	23.0	23.0	26.0	13 5 30.14	— 3.99	. . .	.35	13 5 30.50	— 25.83	
	28	μ^1 Sagittarii	55.2	9.0	22.3	36.0	49.1	2.0	15.5	18 5 35.59	— 0.10	. . .	.27	18 5 40.76	+ 7.77	
	29	δ Ursæ Minoris	50.0	..	55.0	27.5	57.0	21.0	..	18 20 42.10	+ 44.29	. . .	.26	18 21 30.65	— 48.82	
	30	α Lyræ	55.0	11.0	27.2	43.5	59.0	15.0	31.0	18 31 43.10	0.19	. . .	.26	18 31 47.55	+ 4.03	
	31	β Lyræ	38.5	54.0	8.6	24.1	39.0	53.1	8.5	18 44 23.69	.18	. . .	.26	18 44 28.13	4.37	
	32	ζ Aquilæ	42.0	55.0	8.2	21.0	34.0	46.3	59.5	18 58 20.86	.13	. . .	.25	18 58 25.24	5.60	
	33	δ Aquilæ	7.8	20.5	33.0	46.0	58.3	10.5	23.2	19 17 45.61	.11	. . .	.24	19 17 49.96	6.16	
	34	γ Aquilæ	19.4	32.5	45.2	58.0	10.3	22.5	35.8	19 38 57.67	.13	. . .	.24	19 39 2.04	5.62	
	35	α Aquilæ	39.4	52.0	5.0	18.0	30.4	42.5	55.0	19 43 17.47	.12	. . .	.24	19 43 21.83	5.78	H.
	36	β Aquilæ	8.5	21.5	34.4	47.0	59.3	11.3	24.3	19 47 46.61	.12	. . .	.24	19 47 50.97	5.82	
	37	α Andromedæ	46.0	0.5	14.5	29.0	43.0	57.0	11.8	0 0 28.83	.17	. . .	.16	0 0 33.16	5.16	
	38	γ Pegasi	42.5	55.3	8.5	21.3	34.0	47.0	0.0	0 5 21.23	0.13	. . .	.16	0 5 25.52	+ 5.44	
	39	Polaris	30.0	30.0	32.0	31.0	21.0	10.0	15.0	1 5 24.14	+ 4.21	. . .	4.14	1 5 28.49	— 26.05	
16	40	α Lyræ	..	12.0	28.1	44.2	0.2	15.8	32.0	18 31 52.05	— 7.85	. . .	3.20	18 31 47.30	+ 4.06	K.
	41	β Lyræ	39.7	54.8	10.0	25.0	39.8	54.1	9.4	18 44 24.69	+ 0.22	. . .	.20	18 44 28.11	+ 4.39	
	42	ζ Aquilæ	42.9	56.1	9.1	22.0	34.8	47.4	0.4	18 58 21.81	.28	. . .	.20	18 58 25 29	5.62	
	43	δ Aquilæ	8.7	21.4	34.1	46.8	58.9	11.2	24.0	19 17 46.44	+ 0.32	. . .	.20	19 17 49.96	6.17	
	44	α Gruis	..	57.3	16.4	34.7	53.0	10.0	30.3	21 58 43.62	— 8.85	. . .	.17	21 58 37.94	7.36	
	45	Neptune	3.1	16.0	29.0	42.1	54.8	6.9	20.2	22 2 41.73	+ 0.36	. . .	.17	22 2 45.26	. .	
	46	Saturn, 1st L.	43.0	..	8.9	..	34.0	..	59.6	22 43 21.38	.33	} . . .	.16	22 43 25.44	. .	
	47	Saturn, 2d L.	..	57.1	..	22.8	..	47.5	..	22 43 22.47	.38	}				
	48	α Pegasi	29.8	42.8	56.0	8.9	21.9	34.2	47.3	22 57 8.70	.28	. . .	3.16	22 57 12.14	5.22	
20	49	α Aquilæ	41.0	54.3	6.8	19.7	32.3	44.5	57.4	19 43 19.43	.12	. . .	2.30	19 43 21.85	5.86	
	50	β Aquilæ	10.6	23.1	36.1	48.7	1.2	13.0	26.0	19 47 48.39	+ 0.11	. . .	.30	19 47 50.80	5.90	
	51	Piscium (89)	..	..	37.9	..	2.9	15.0	28.0	0 18 5.95	— 15.62	. . .	.21	0 17 52.54	5.52	
	52	Ceti (112)	37.3	50.0	2.8	15.2	27.8	39.9	52.8	0 22 15.11	+ 0 0.09	. . .	+ 2.21	0 22 17.41	+0 5.60	

DATE.		CLOCK. At 18h.	Hourly Rate.	VALUE OF m.	n.	c.
		s.	s.	s.	s.	s.
Sept.	13	s 0 5.14	g 0.022	—0.006	+0.251	0.000
	14	4.47	.020	+0.057	0.173	0.000
	15	4.27	.017	0.109	+0.108	0.000
	16	s 0 3.21	g 0.010	+0.324	—0.159	0.000

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
Sept. 21	.	Weisse XX, 1023 . .	..	26.2	39.1	52.0	4.8	17.2	..	20 39 51.86	— 0 0.01	. . .	+ 1.85	20 39 53.70	+0 6.44	H.
	2	μ Aquarii	47.0	59.0	12.7	25.2	37.8	50.4	3.4	20 44 25.07	+ .10	. . .	.84	20 44 27.01	6.46	
	3	61^1 Cygni	16.3	32.6	48.2	4.3	20.2	35.8	52.0	21 0 4.17	.14	. . .	.83	21 0 6.12	4.47	
	4	ζ Cygni	43.5	58.1	12.3	27.0	41.2	55.1	10.0	21 6 26.74	.13	. . .	.83	21 6 28.70	4.36	
	5	α Cephei	37.2	4.2	31.0	57.6	24.0	50.2	16.5	21 14 57.24	.21	. . .	.83	21 14 59.28	0.37	
	6	β Aquarii	53.5	6.1	19.0	31.8	44.1	56.6	9.2	21 23 31.47	.10	. . .	.85	21 23 33.40	+ 6.08	
	7	β Cephei	53.0	29.5	6.3	43.2	19.0	55.0	32.0	21 26 42.57	.27	. . .	.82	21 26 44.66	— 2.33	
	8	Moon, 1st L. . . .	26.2	40.2	53.3	6.5	19.4	32.1	45.5	21 37 6.17	.10	+ 69.42	.82	21 38 17.52	. .	
	9	ι Aquarii	32.8	46.0	59.0	12.0	24.8	37.3	50.5	21 58 11.77	.10	. . .	.81	21 58 13.68	+ 6.07	
	10	Neptune	38.0	50.5	3.8	16.6	29.3	41.8	55.0	22 2 16.43	.10	. . .	.80	22 2 18.33	. .	
	11	ϑ Aquarii	9.0	21.8	34.8	47.0	59.2	12.0	25.0	22 8 46.97	.10	. . .	.80	22 8 48.87	5.91	
22	12	Sun, 1st L.	46.8	59.3	12.0	24.6	37.0	49.2	2.2	11 55 24.44	.10	. . .	.49	11 56 30.04	. .	K
	13	Sun, 2d L.	55.0	7.3	20.1	32.8	45.0	57.1	10.0	11 57 32.47	.10					
	14	Venus, 1st L . . .	3.5	16.5	29.3	42.3	54.8	7.7	20.6	12 44 42.10	.07	+ 1.90	.48	12 44 44.55	. .	
	15	δ Aquilæ	10.8	23.2	36.0	48.5	0.9	13.0	26.0	19 17 48.34	.10	. . .	.35	19 17 49.79	6.27	
	16	γ Aquilæ	22.1	35.0	47.9	0.9	13.1	25.6	38.7	19 39 0.47	.12	. . .	.34	19 39 1.93	5.73	
	17	β Aquilæ	11.2	24.0	36.8	49.4	1.8	14.1	27.0	19 47 49.19	.11	. . .	.33	19 47 50.63	5.93	
	18	α Cygni	21.8	39.1	57.2	14.9	32.1	49.2	17.4	20 36 14.53	.22	. . .	.32	20 36 16.07	3.04	
	19	ι Piscium	29.7	42.0	54.8	7.2	19.9	32.0	44.8	23 32 7.20	.11	. . .	+ 1.26	23 32 8.57	5.57	
27	20	α Lyræ	0.8	17.1	33.2	49.2	5.2	20.8	37.3	18 31 49.09	.20	. . .	— 2.16	18 31 47.13	4.34	H.
	21	β Lyræ	44.2	0.0	15.1	30.1	44.6	59.2	14.5	18 44 29.67	.18	. . .	.17	18 44 27.68	3.64	
	22	ζ Aquilæ	48.6	1.5	14.2	27.2	40.0	52.6	5.7	18 58 27.11	.13	. . .	.17	18 58 25.07	5.82	
	23	δ Aquilæ	14.1	26.9	39.2	52.1	4.2	16.3	29.1	19 17 51.70	.11	. . .	.18	19 17 49.63	6.36	
	24	γ Aquilæ	25.5	38.3	51.2	4.1	16.9	29.0	42.1	19 39 3.87	.12	. . .	.19	19 39 1.80	5.82	
	25	α Aquilæ	45.8	58.6	11.3	24.0	36.5	49.0	1.9	19 43 23.87	+ 0.12	. . .	.19	19 43 21.80	6.13	
	26	ε Pegasi	..	21.0	33.1	46.0	58.2	10.8	24.0	21 36 52.18	— 6.24	. . .	.24	21 36 43.70	5.48	
	27	α Aquarii	23.5	36.0	..	..	13.5	25.6	38.7	21 58 3.46	— 2.34	. . .	2.25	21 57 58.87	5.79	
29	28	Sun, 1st L.	4.3	17.0	29.5	42.1	54.7	6.9	19.5	12 20 42.00	+ 0.10	. . .	6.20	12 21 42.10	. .	B.
	29	Sun, 2d L.	12.5	25.3	38.1	50.4	3.0	15.2	28.3	12 22 50.40	.10					
	30	α Cephei	43.4	10.1	37.0	3.8	30.0	56.1	23.1	21 15 3.36	.22		.62	12 14 58.96	0.60	
	31	β Aquarii	0.0	12.9	25.4	37.9	50.5	2.7	15.8	21 23 37.89	+ 0.09	. . .	.62	21 23 33.36	+ 6.15	K.
	32	β Cephei	..	..	12.5	49.1	25.0	0.5	38.0	21 27 25.02	— 36.03	. . .	.62	21 26 44.39	— 2.00	
	33	ε Pegasi	..	..	..	48.2	0.9	13.1	26.2	21 37 7.10	— 18.88	. . .	.62	21 36 43.60	+ 5.50	
Oct. 1	34	α^2 Capricorni	4.1	17.2	30.0	43.2	56.0	8.5	21.5	20 9 42.93	+ 0.16	. . .	6.39	20 9 36.70	6.91	B.
	35	ε Delphini	25.0	38.0	50.5	3.8	16.0	28.2	41.3	20 26 3.26	.17	. . .	.20	20 25 57.03	5.65	
	36	α Cygni	28.5	47.0	4.5	22.3	40.0	57.0	14.5	20 36 21.97	.20	. . .	.41	20 36 15.76	3.25	
	77	61^1 Cygni	24.3	40.3	56.5	12.4	28.1	43.5	0.0	21 0 12.16	.20	. . .	.42	21 0 5.94	4.64	
	38	ζ Cygni	51.3	6.1	21.0	35.0	49.4	3.4	18.0	21 6 34.89	.19	. . .	.43	21 6 28.65	4.50	
	39	α Cephei	45.0	12.3	39.0	5.5	32.0	57.9	25.0	21 15 5.24	.23	. . .	.44	21 14 59.03	0.67	
	40	β Aquarii	1.7	14.3	27.2	39.5	52.2	4.5	17.4	21 23 39.54	.16	. . .	6.44	21 23 33.26	6.18	
3	41	δ Aquilæ	20.2	33.0	45.6	58.2	10.5	22.9	35.0	19 17 57.91	.17	. . .	8.38	19 17 49.70	6.46	
	42	γ Aquilæ	31.5	44.0	57.0	10.2	23.0	35.0	48.0	19 39 9.81	.17	. . .	.40	19 39 1.58	5.92	
	43	α Aquilæ	52.0	4.5	17.4	30.0	42.5	55.0	8.0	19 43 29.91	0.17	. . .	.40	19 43 21.68	6.08	
	44	Weisse XIX, 1259 .	22.5	35.0	48.0	1.0	..	..	..	19 49 41.62	19.55	. . .	.40	19 49 52.77	7.12	
	45	Iris	..	..	..	40.0	..	..	..	19 51 40.00	+ 0.02	. . .	.41	19 51 31.61	. .	
	46	Weisse XIX, 1319 .	..	17.0	30.0	42.5	55.5	8.0	21.5	19 52 49.08	— 6.33	. . .	8.41	19 52 34.34	7.10	
4	47	β Aquilæ	22.4	35.1	47.8	0.7	13.0	25.2	38.0	19 48 0.31	+ 0.17	. . .	9.94	19 47 50.54	6.13	K.
4r		Iris	45.4	58.3	11.4	24.3	37.2	49.9	3.0	19 52 24.21	+ 0.16	. . .	.94	19 52 14.43	. .	
	49	Weisse XIX, 1319 .	..	..	..	..	..	..	22.9	19 53 22.90	— 38.59	. . .	.94	19 52 34.37	7.11	
	50	α Cygni	32.4	50.0	..	25.8	43.2	0.2	18.4	20 36 28.33	— 2.70	. . .	.97	20 36 15.66	3.33	
	51	61^1 Cygni	27.7	44.0	0.0	15.7	31.7	46.8	3.3	21 0 15.60	+ 0 0.20	. . .	— 9.99	21 0 5.81	+0 4.70	

DATE.	CLOCK. At 19h.		Hourly Rate.	VALUE OF m.	n.	c.
		s.	s.	s.	s.	s.
Sept. 21	s	1.89	g 0.028			
22	s	1.35	.020			
27	f	2.15	.028			
29		6.62	.000	+0.101	+0.118	0.000
Oct. 1		6.35	.044	+0.169	+0.034	0.000
3		8.38	.044			
4	f	9.91	g 0.044			

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
Oct. 4	1	Lalande, 41229	..	..	46.6	35.0	22.3	9.8	59.0	21 5 22.54	−0 47.84	. .	− 9.99	21 4 24.71	−0 5.05	K.
	2	Lalande, 41236	..	..	52.0	40.4	28.3	15.5	5.4	21 5 28.32	— 48.12	. .	10.00	21 4 30.20	5.12	
	3	Draconis (7393)	9.5	57.4	45.8	32.3	19.3	5.5	53.8	21 10 31.94	+ 0.29	. .	10.00	21 10 22.23	— 4.73	
8	4	β Aquarii	..	..	..	..	59.2	11.8	24.4	21 24 11.80	— 25.03	. .	13.56	21 23 33.21	+ 6.26	H.
	5	β Cephei	7.2	44.5	21.0	57.3	33.6	9.0	46.2	21 26 56.97	+ 0.55	. .	.56	21 26 43.96	— 1.57	
	6	ε Pegasi	18.8	31.2	44.5	57.1	9.8	22.1	35.0	21 36 56.93	.08	. .	.57	21 36 43.44	+ 5.61	
	7	α Aquarii	34.6	47.2	0.0	12.2	25.0	37.2	50.0	21 58 12.31	0.04	. .	.59	21 57 58.76	5.90	
	8	Neptune	36.2	49.2	2.1	14.2	27.5	40.1	..	22 1 8.22	+ 6.41	. .	.59	22 1 1.04	. .	
	9	Aquarii (7722)	..	..	31.0	43.2	53.2	9.0	21.8	22 2 56.24	— 12.81	. .	.59	22 2 29.84	6.27	
	10	Saturn, 2d L.	47.0	..	12.5	..	38.0	..	3.6	22 38 25.27	— 0.01	. .	13.62	22 38 11.04	. .	
	11	Saturn, 1st L.	..	58.8	..	24.2	..	49.1	..	22 38 24.03	+ 0.04					
9	12	Sun, 1st L.	38.7	51.6	4.2	16.8	29.2	41.5	..	12 57 10.33	6.45	. .	14.83	12 58 6.69	. .	K.
	13	Sun, 2d L.	48.0	0.8	13.5	26.2	38.9	51.1	4.2	12 59 26.10	.16					
	14	β Aquilæ	27.5	40.1	53.0	5.6	18.0	30.2	43.1	19 48 5.36	.17	. .	15.13	19 47 50.40	6.22	
	15	Weisse XIX, 1319	10.2	23.4	36.4	49.4	2.3	14.7	28.0	19 52 49.20	.16	. .	.13	19 52 34.23	7.20	
	16	61¹ Cygni	32.6	48.8	5.0	20.9	36.7	51.9	8.2	21 0 20.59	+ 0.20	. .	.18	21 0 5.61	+ 4.80	
	17	Lalande, 41229	..	2.5	51.0	39.5	27.0	..	3.2	21 4 48.64	— 9.66	. .	.18	21 4 23.80	— 4.60	
	18	Lalande, 41236	..	7.8	56.8	..	32.9	20.0	10.2	21 5 13.54	— 28.70	. .	.18	21 4 29.66	4.67	
	19	Draconis (7393)	14.2	2.0	49.8	37.0	..	9.8	58.2	21 10 28.50	+ 7.89	. .	.19	21 10 21.20	— 4.30	
	20	Neptune	34.0	47.0	0.0	12.5	25.5	37.9	51.2	22 1 12.59	0.16	. .	.22	22 0 57.53	. .	
	21	ζ Pegasi	30.2	43.2	55.8	8.5	21.2	33.2	46.8	22 34 8.41	.17	. .	.25	22 33 53.33	+ 5.46	
	22	ι Piscium	45.9	58.7	11.5	24.0	36.6	48.7	1.4	23 32 23.83	+ .17	. .	15.29	23 32 8.71	+ 5.58	
11	23	Sun, 1st L.	3.0	15.8	28.4	41.2	53.8	6.0	19.0	13 4 41.03	— .01	. .	17.07	13 5 28.68	. .	H.
	24	Sun, 2d L.	12.8	25.3	38.1	50.5	3.3	15.2	28.3	13 6 50.50	0 0.01					
	25	Polaris, S. P.	..	13.0	59.0	..	..	51.0	56.0	13 9 59.75	− 4 10.91	. .	.08	13 5 31.76	— 31.03	
	26	Mercury	45.2	58.2	11.2	24.1	37.0	..	2.9	14 0 19.77	+ 0 4.20	. .	.13	14 0 6.84	. .	
	27	α Bootis	18.3	32.1	45.8	59.1	12.2	25.1	38.1	14 8 58.67	.09	. .	.14	14 8 41.62	+ 7.44	
	28	γ Aquilæ	41.0	53.2	6.6	19.1	31.6	44.1	57.1	19 39 18.96	.05	. .	.47	19 39 1.54	6.07	
	29	α Aquilæ	0.8	14.0	26.5	39.2	52.0	4.1	17.1	19 43 39.10	.05	. .	.47	19 43 21.68	6.23	
	30	β Aquilæ	30.0	42.9	55.2	8.1	20.8	32.7	45.6	19 48 7.90	+ 0.12	. .	.48	19 47 50.54	6.26	
	31	α Cephei	..	22.5	49.5	16.2	42.5	8.2	35.5	21 15 29.07	— 12.91	. .	.54	21 14 48.62	1.03	
	32	ε Pegasi	22.6	35.2	48.2	1.1	13.1	26.0	38.5	21 36 50.67	+ 0.05	. .	.56	21 36 33.16	5.65	
	33	Dec. — 13° 45′ (?)	..	32.0	45.1	58.2	10.2	23.0	36.1	22 1 4.10	— 6.46	. .	.61	22 0 40.03	6.29	
	34	Weisse XXII, 28	46.0	59.1	12.2	24.8	38.0	50.2	3.2	22 2 24.79	0.03	. .	.61	22 2 7.15	6.30	
	35	Dec. — 12° 49′ (?)	..	57.2	10.0	23.0	35.8	48.2	1.1	22 4 29.22	6.44	. .	.61	22 4 5.17	6.30	
	36	Saturn, 1st L.	16.0	..	41.8	..	11.0	..	32.3	22 37 54.28	— 0.05	. .	17.65	22 37 37.23	. .	
	37	Saturn, 2d L.	..	30.0	..	56.0	..	20.6	..	22 37 55.53	.00					
15	38	γ Aquilæ	46.2	59.4	12.1	25.0	37.2	49.8	2.8	19 39 24.64	+ .06	. .	23.23	19 39 1.47	6.15	
	39	α Aquilæ	6.3	19.3	32.2	45.0	57.3	9.8	21.9	19 43 44.69	.05	. .	.23	19 43 21.51	6.30	
	40	β Aquilæ	35.5	48.1	1.1	13.7	26.1	38.6	51.2	19 48 13.47	+ .04	. .	.23	19 47 50.38	6.33	
	41	Weisse XIX, 1319	18.5	31.1	44.6	57.5	10.1	23.0	36.0	19 52 57.27	— .04	. .	.23	19 52 34.00	7.32	
	42	Neptune	22.1	35.0	48.1	0.8	13.3	26.1	39.3	22 1 0.67	.03	. .	.32	22 0 37.32	. .	
	43	Aquarii (7722)	14.2	27.1	40.2	53.3	6.0	18.4	31.6	22 2 52.97	.03	. .	.32	22 2 29.62	6.35	
	44	Aquarii (7740)	55.2	8.2	21.0	34.0	47.0	59.2	12.2	22 4 33.83	— .03	. .	.32	22 4 10.48	6.36	
	45	α Tauri	57.0	10.1	23.2	36.1	49.2	2.0	15.0	4 27 36.09	+ .08	. .	23.57	4 27 12.60	7.23	
16	46	α Aquilæ	8.2	21.0	33.9	46.4	58.9	11.2	24.2	19 43 46.26	+ 0.17	. .	24.97	19 43 21.46	6.32	K.
	47	β Aquilæ	..	..	..	..	..	40.0	52.8	19 48 46.40	— 31.13	. .	24.97	19 47 50.30	6.35	
	48	ζ Pegasi	40.0	53.0	5.8	18.5	30.9	43.3	56.4	22 34 18.27	+ 0.17	. .	25.05	22 33 53.39	5.53	
	49	α Pegasi	..	11.1	24.2	37.2	49.7	2.4	15.5	22 57 43.35	— 6.30	. .	.06	22 57 11.99	5.36	
	50	ι Piscium	55.8	8.4	21.0	33.8	46.2	58.2	11.4	23 32 33.54	+ 0 0.17	. .	.08	23 32 8.63	+ 5.61	
17	51	Polaris, S. P.	..	..	..	2.0	2.0	4.0	14.0	13 18 5.50	−12 7.70	. .	− 25.90	13 5 31.90	−0 31.48	H.

DATE.	CLOCK. At 19h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Oct. 8	f 13.42	g 0.056	+0.049	+0.185	0.000
9	15.10	.043			
11	17.43	.060	+0.017	+0.224	0.000
15	23.20	.040			
16	f 24.95	g 0.030			

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
Oct. 18	1	Sun, 1st L.	..	..	38.5	51.2	4.0	16.2	29.0	13 31 3.78	— 0 12.87	}				
	2	Sun, 2d L.	23.8	36.4	49.6	2.0	15.0	27.0	40.1	13 33 1.99	— 0.14	}	— 25.90	13 31 30.48	. . .	H.
	3	α Bootis	27.9	41.1	55.0	8.2	21.0	34.1	47.5	14 9 7.83	+ 0.04		25.91	14 8 41.96	+0 7.45	
	4	Mercury	29.8	43.1	56.4	9.6	22.7	..	49.0	14 40 5.10	+ 4.13		26.11	14 39 43.08	. . .	
	5	γ Aquilæ	49.2	2.1	15.0	27.9	40.1	52.8	6.0	19 39 27.59	— 0.02		.13	19 39 1.44	6.20	
	6	α Aquilæ	9.5	22.4	35.1	47.9	0.3	12.4	25.7	19 43 47.61	.03		.14	19 43 21.44	6.35	
	7	β Aquilæ	38.2	51.3	4.0	16.8	29.2	41.3	54.2	19 48 16.43	.05		.14	19 47 50.24	6.38	
	8	Weisse XIX, 1319	21.3	4.5	47.5	0.4	13.2	26.0	39.1	19 53 0.29	.18		.14	19 52 33.97	7.38	
	9	Neptune	16.0	29.3	42.8	55.5	8.0	20.6	34.0	22 0 55.17	.16		.15	22 0 28.86	. . .	
	10	Aquarii (7722)	17.6	30.4	43.7	56.3	9.0	21.5	34.7	22 2 56.17	.16		.15	22 2 29.86	6.37	
	11	Aquarii (1740)	58.2	11.5	24.4	37.2	50.0	2.1	15.3	22 4 36.96	0.16		.15	22 4 10.55	6.39	
	12	Saturn, 1st L.	..	..	42.9	..	8.0	..	33.4	22 36 8.10	12.96	}				
	13	Saturn, 2d L.	..	31.0	..	56.5	..	21.8	..	22 36 56.43	0.12	}	.17	22 36 29.55	. . .	
	14	α Piscis Australis	57.3	12.1	26.9	41.1	55.8	9.9	24.7	22 49 41.11	— .28		.18	22 49 14.65	6.55	
	15	α Aurigæ	1.0	19.0	37.2	55.0	12.8	30.0	48.8	5 5 54.83	+ .28		26.43	5 5 28.68	8.25	
20	16	α Cygni	50.0	7.8	25.6	43.1	0.8	17.9	35.5	20 36 42.96	.28		27.68	20 36 15.56	3.74	K.
	17	61[1] Cygni	45.0	1.2	17.2	33.2	49.1	4.2	20.1	21 0 32.94	+ 0.19		.69	21 0 5.44	+ 5.03	
	18	Lalande, 41229	..	..	3.0	51.5	..	24.8	14.8	21 5 38.52	— 46.61		.69	21 4 24.22	— 3.82	
	19	Lalande, 41236	..	..	8.8	56.8	44.0	31.8	21.8	21 5 44.64	46.93		.69	21 4 30.02	3.88	
	20	Draconis (7393)	..	13.8	1.8	49.0	35.8	21.3	10.1	21 11 11.97	22.18		.69	21 10 22.10	— 3.55	
	21	ζ Pegasi	42.8	55.8	8.4	21.3	33.7	46.2	59.2	22 34 21.06	0.08		.74	22 33 53.24	+ 5.57	
	22	Saturn, 1st L.	2.0	..	27.8	..	53.4	..	18.6	22 36 40.45	.25	}				
	23	Saturn, 2d L.	..	16.1	..	41.8	..	6.8	..	22.36 41.57	.25	}	.74	22 36 13.02	. . .	
	24	α Pegasi	0.9	14.0	27.0	40.0	52.9	5.3	18.8	22 57 39.84	0.25		.75	22 57 12.02	5.39	
	25	Moon, 1st L.	..	52.4	5.3	18.2	30.9	43.5	56.7	23 6 24.50	6.63	+ 68.74	.75	23 6 58.86	. . .	
	26	ι Piscium	58.5	11.1	24.0	36.5	49.1	1.2	14.2	23 32 36.37	0.12		.77	23 32 8.48	5.64	
	27	γ Pegasi	..	..	..	53.7	6.2	18.8	32.2	0 6 12.72	19.40		.78	0 5 25.54	5.37	
	28	β Ceti	46.0	59.4	12.9	26.3	39.3	52.0	5.7	0 36 25.94	0.31		.79	0 35 57.84	5.49	
	29	Uranus	5.9	19.0	31.5	44.3	56.2	9.0	21.8	0 59 43.96	.12		.80	0 59 16.04	. . .	
	30	ϑ[1] Ceti	16.1	29.0	41.8	54.4	7.2	19.3	32.3	1 16 54.29	.23		.80	1 16 26.26	+ 5.33	
	31	Venus, 2d L.	52.6	5.1	18.2	30.5	43.0	55.0	8.2	12 0 30.37	— 0 0.20	— 1.76	.88	12 0 0.53	. . .	H.
	32	Polaris, S. P.	14.0	25.0	..	1.0	57.0	4.0	..	13 2 56.20	+ 3 0.46		.92	13 5 28.74	— 31.00	
21	33	Sun, 1st L	32.3	45.2	58.0	11.1	23.3	35.8	49.0	13 42 10.67	— 0 0.24	}				
	34	Sun, 2d L.	44.0	56.2	10.0	22.6	35.0	47.3	0.8	13 44 22.27	.24	}	27.95	13 42 48.28	. . .	
	35	Neptune	11.1	24.2	37.2	50.0	2.8	15.1	28.3	22 0 49.81	.26		28.26	22 0 11.29	. . .	
	36	Aquarii (7722)	19.2	32.1	45.4	58.4	11.1	23.5	36.7	22 2 58.06	.25		.26	22 2 29.55	+ 6.40	
	37	Aquarii (7740)	0.2	13.6	26.6	39.1	51.8	4.2	17.3	22 4 38.97	.25		.26	22 4 10.46	+ 6.42	
	38	ζ Pegasi	43.3	56.3	9.2	21.9	34.5	46.9	59.9	23 34 21.71	.08		.27	22 33 53.36	5.59	
	39	Saturn, 1st L.	54.8	..	20.8	..	46.3	..	11.8	22 35 33.42	.26	}				
	40	Saturn, 2d L.	..	9.2	..	35.0	..	59.8	..	22 35 34.67	.21	}	.27	22 33 5.54	. . .	
	41	α Piscis Australis	59.2	14.1	28.8	43.3	57.6	11.9	26.0	22 49 42.99	.42		.27	22 49 14.30	6.59	
	42	α Pegasi	1.4	14.2	27.8	40.9	53.2	6.0	19.0	22 57 40.36	0.04		.27	22 57 12.05	+ 5.40	
	43	γ Cephei	..	53.3	48.5	43.8	38.0	31.0	27.3	23 34 10.32	— 26.03		.31	23 33 15.98	— 1.75	
	44	α Andromedæ	19.0	33.5	48.0	2.0	16.0	30.0	44.0	0 1 1.84	+ 0.08		.31	0 0 33.61	+ 5.13	
	45	Moon, 1st L.	46.1	59.1	12.0	24.8	37.2	50.0	3.2	0 5 24.63	— .16	+ 69.30	28.32	0 6 5.45	. . .	
25	46	Sun, 1st L.	49.0	1.5	14.4	27.3	40.1	52.4	5.2	12 57 27.13	+ .01	}				
	47	Sun, 2d L.	0.5	13.3	26.5	39.2	52.1	4.5	17.9	13 59 39.14	+ 0.01	}	31.67	13 58 1.45	. . .	B.
	48	Weisse XX, 268	..	..	36.0	48.5	1.4	14.0	27.1	20 12 1.40	— 12.90		.93	20 11 16.57	7.33	
	49	Iris,	..	22.0	35.0	47.5	0.4	13.0	26.0	20 13 53.98	— 6.46		.93	20 13 15.59	. . .	
	50	α Cygni	54.0	12.0	29.5	47.2	4.7	21.8	40.0	20 36 47.03	+ 0.23		.95	20 36 15.31	3.87	
	51	Aquarii (7261)	34.1	47.0	0.0	12.5	25.3	37.5	50.5	20 49 12.41	.01		.96	20 48 40.46	6.97	
	52	61[1] Cygni	49.5	5.5	21.5	37.5	53.2	8.5	24.3	21 0 37.14	+ 0 0.19		— 31.97	21 0 5.36	+0 5.23	

DATE.	CLOCK. At 20h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Oct. 18	f 26.14	g 0.037	—0.086	+0.153	0.000
20	27.67	.030	—0.159	+0.441	0.000
11	28.17	.037			
25	f 31.93	g 0.043	+0.044	+0.180	0.000

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s	m. s.	
Oct. 25	1	ζ Cygni	17.0	31.4	46.0	0.3	14.8	28.6	43.2	21 7 0.19	+ 0 0.15	. .	— 31.97	21 6 28.37	+0 4.95	B.
	2	β Aquarii	27.2	39.1	52.5	5.3	17.6	30.0	43.0	21 24 4.96	.02	. .	.98	21 23 33.00	6.52	
	3	ε Pegasi	37.0	50.0	2.4	15.4	28.0	40.4	53.1	21 37 15.19	.01	. .	31.99	21 36 43.21	5.85	
	4	Neptune	6.3	19.2	32.2	45.2	57.8	10.3	23.4	22 0 44.91	.00	. .	32.01	22 0 12.90	. .	
	5	ι Piscium	2.7	15.4	28.0	40.5	53.0	5.0	18.1	23 32 40.39	.06	. .	.07	23 32 8.38	5.67	
	6	α Andromedæ	22.5	37.0	51.2	5.5	19.5	33.5	48.0	0 1 5.31	.14	. .	.09	0 0 33.46	5.11	
	7	γ Pegasi	18.5	31.6	45.0	58.0	10.2	23.0	36.3	0 5 57.51	.09	. .	.10	0 5 25.50	5.39	
	8	α Cassiopeiæ	25.0	45.0	7.0	29.5	51.2	12.5	36.0	0 32 29.46	0.32	. .	.12	0 31 57.66	+ 4.34	
	9	Polaris	55.0	2.0	5.0	4.0	55.0	42.0	55.0	1 5 56.86	7.25	. .	.14	0 5 31.97	— 30.98	
	10	α Arietis	29.2	43.0	56.9	10.2	23.3	37.0	51.0	1 59 10.09	0.12	. .	.17	1 58 38.04	+ 5.67	
	11	Mars, 1st L.	46.9	..	13.0	..	38.0	..	4.0	2 29 25.47	.08 }	. .	.20	2 28 54.01	. .	
	12	Mars, 2d L.	..	1.2	..	27.2	..	52.0	..	2 29 26.80	.08 }					
	13	α Ceti	15.4	28.1	41.0	53.5	5.7	18.0	31.0	2 54 53.24	.06	. .	.22	2 54 21.08	5.45	
	14	ξ Tauri	51.0	4.0	16.5	29.2	42.0	54.1	7.1	3 19 29.13	.07	. .	.23	3 18 56.97	5.69	
	15	η Tauri	19.1	33.1	47.0	0.5	14.2	27.4	41.2	3 39 0.36	.13	. .	.25	3 38 28.24	6.20	
	16	λ Tauri	10.0	23.1	36.0	49.0	1.5	14.0	27.0	3 52 48.66	.08	. .	.26	3 52 16.48	5.89	
	17	Moon, 2d L.	9.2	23.2	36.5	50.2	3.3	16.4	30.1	4 14 49.84	.10	— 71.20	.27	4 13 6.47	. .	
	18	α Tauri	6.0	19.0	32.0	45.2	58.3	10.9	24.2	4 27 45.09	.10	. .	32.28	4 27 12.91	6.21	
26	19	α Cygni	55.4	13.3	31.2	48.7	6.3	23.0	41.2	20 36 48.44	.26	. .	33.47	20 36 15.23	3.90	K.
	20	61¹ Cygni	50.8	6.9	22.9	39.0	54.8	10.2	26.4	21 0 38.71	0.19	. .	.49	21 0 5.41	+ 5.15	
	21	Draconis (7393)	31.0	18.6	6.8	54.0	40.8	26.8	15.0	21 10 53.29	+ 1.16	. .	.49	21 10 20.96	— 3.07	
	22	ε Pegasi	38.4	51.5	4.2	17.0	29.5	41.7	54.8	21 37 16.73	— 0.02	. .	.51	21 36 43.20	+ 5.86	
	23	Neptune	..	..	32.2	44.8	57.3	10.2	23.2	22 0 57.54	13.01	. .	.53	22 0 11.00	. .	
	24	Saturn, 1st L.	..	..	52.7	5.7	18.0	30.6	43.7	22 36 18.14	12.91	+ 0.60	.55	22 35 32 28	. .	
	25	β Ceti	51.8	4.8	18.7	32.0	44.8	57.7	11.5	0 36 31.61	0.20	. .	.63	0 35 57.78	5.50	
27	26	Sun, 1st L.	31.1	44.4	57.4	10.5	22.8	35.3	48.5	14 5 10.00	.14 }	. .	.72	14 5 42.40	. .	B.
	27	Sun, 2d L.	44.0	57.0	9.6	22.5	35.3	48.0	1.3	14 7 22.53	.14 }					
	28	Weisse XX, 387	33.5	46.5	0.0	12.8	25.3	38.0	51.0	20 16 12.44	— .14	. .	.98	20 15 38.32	7.32	
	29	α Cygni	56.0	13.5	32.0	49.0	6.0	24.0	41.9	20 36 48.91	+ .35	. .	33.99	20 36 15.27	3.93	
	30	61¹ Cygni	51.4	8.0	23.5	39.0	55.0	9.7	27.0	21 0 39.09	.19	. .	34.01	21 0 5.27	5.17	
	31	ζ Cygni	19.0	33.0	48.2	2.0	16.5	30.3	45.0	21 7 2.00	.12	. .	.01	21 6 28.11	4.98	
	32	α Cephei	12.0	38.0	6.0	32.0	58.5	24.0	51.0	21 15 31.64	+ .54	. .	.02	21 14 58.16	1.67	
	33	β Aquarii	29.0	42.0	54.5	7.4	20.0	32.0	45.0	21 24 7.13	— .10	. .	.02	21 23 33.01	6.55	
	34	ε Pegasi	39.2	52.0	5.0	17.0	30.0	42.0	55.2	21 37 17.20	.01	. .	.03	21 36 43.16	5.88	
	35	Pegasi (7788)	45.1	58.1	10.5	23.0	35.3	47.5	0.5	22 13 22.86	.04	. .	.06	22 12 48.76	5.86	
	36	π Aquarii	27.6	40.0	53.0	5.0	17.5	30.0	42.8	22 18 5.13	.06	. .	.06	22 17 31.01	5.99	
	37	ζ Pegasi	49.0	1.5	15.0	28.0	40.2	52.5	5.5	22 34 27.39	.01	. .	.07	22 33 53.31	5.65	
	38	α Piscis Australis	5.2	19.5	34.2	49.0	3.2	17.1	32.0	22 49 48.60	— .25	. .	.08	22 49 14.27	6.67	
	39	α Pegasi	7.0	20.1	33.1	46.2	59.0	11.5	25.0	22 57 45.99	+ .02	. .	.09	22 57 11.72	5.46	
28	40	Sun, 1st L.	23.5	36.6	49.8	2.9	15.5	27.1	41.0	14 9 2.34	.06 }	. .	34.65	14 9 34.18	. .	
	41	Sun, 2d L.	36.5	49.6	2.5	15.3	28.1	40.5	54.0	14 11 15.21	.06 }					
	42	Weisse XX, 387	35.3	..	1.4	14.2	26.8	..	52.7	20 16 14.08	+ 0.01	. .	35.70	20 15 38.39	6.68	K.
	43	Iris	..	..	..	46.2	58.9	..	24.8	20 18 3.30	— 17.19	. .	.70	20 17 10.41	. .	
	44	61¹ Cygni	..	..	25.0	40.5	56.8	..	28.9	21 0 52.80	— 11.81	. .	.74	21 0 5.25	5.19	
	45	ζ Cygni	20.3	35.3	49.6	4.0	18.3	32.3	46.9	21 7 3.81	+ 0.17	. .	.74	21 6 28.24	5.00	
	46	β Aquarii	30.7	43.4	56.2	8.8	21.4	33.2	46.2	21 24 8.56	.08	. .	.76	21 23 32.88	6.56	
	47	ε Pegasi	40.7	53.6	6.2	19.0	31.7	44.0	57.0	21 37 18.89	+ 0.12	. .	.77	21 36 43.24	+ 5.89	
	48	Polaris, S. P.	11.0	27.5	11.0	8.0	3.0	8.0	17.0	13 6 12.21	— 4.91	. .	.80	13 5 31.50	— 30.56	B.
	49	η Bootis	20.9	34.2	47.4	0.1	..	..	..	13 47 40.62	+ 19.95	. .	.83	13 47 24.74	+ 7.67	
	50	α Bootis	37.3	51.0	4.5	17.8	31.0	44.0	57.3	14 9 17.56	0.14	. .	35.35	14 8 41.85	+0 7.42	
29	51	Sun, 1st L.	16.7	30.0	43.1	55.9	8.9	21.9	35.0	14 12 55.93	.06 }	. .	36.08	14 13 26.36	. .	
	52	Sun, 2d L.	30.0	43.1	56.4	9.0	21.4	34.4	47.5	14 15 8.83	+ 0 0.06 }					

DATE.	CLOCK. At 20h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Oct. 26	f 33.45	g0.040	—0.080	+0.343	0.000
27	33.98	.041	—0.063	0.321	0.000
28	f 35.70	g0.038	+0.090	+0.131	0.000

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
Oct. 29	1	β Aquilæ	48.5	1.0	14.0	26.5	39.0	51.0	4.0	19 48 26.29	+0 0.11	. . .	— 36.36	19 47 50.04	+0 6.57	B.
	2	α Cygni	58.0	16.0	33.5	51.5	9.0	26.3	44.0	20 36 51.19	.22	. . .	.40	20 36 15.01	3.92	
	3	61[1] Cygni	53.4	10.0	16.0	41.6	57.5	13.0	29.0	21 0 41.50	.20	. . .	.42	21 0 5.28	5.22	
	4	ζ Cygni	21.0	35.0	50.0	4.0	18.5	32.0	47.4	21 7 3.99	.17	. . .	.42	21 6 27.74	5.02	
	5	α Cephei	14.0	41.0	7.5	34.5	1.0	26.0	54.0	21 15 34.00	.33	. . .	.43	21 14 57.90	1.76	
	6	β Aquarii	31.5	44.2	57.0	9.3	22.0	34.0	47.2	21 24 9.31	.11	. . .	.44	21 23 32.89	6.58	
	7	ε Pegasi	41.2	54.3	7.0	20.0	32.2	44.2	57.2	21 37 19.44	.07	. . .	.45	21 36 43.06	5.91	
	8	Neptune	4.2	17.1	30.0	43.1	55.8	8.2	21.2	22 0 42.80	.06	. . .	.47	22 0 6.39	. .	
	9	ζ Pegasi	51.0	4.2	17.1	30.0	42.5	55.0	8.0	22 34 29.69	.12	. . .	.50	22 33 53.31	5.68	
	10	α Piscis Australis	7.0	22.0	36.5	51.0	5.4	29.5	35.0	22 50 50.91	.02	. . .	.51	22 50 14.42	6.70	
	11	α Pegasi	9.2	22.5	36.0	48.5	1.5	14.0	27.0	22 57 48.39	.13	. . .	.52	22 57 12.00	5.48	
	12	ι Piscium	7.1	20.0	32.5	45.2	37.3	10.0	23.0	23 32 45.01	.11	. . .	.55	23 32 8.57	5.70	
	13	α Andromedæ	27.0	41.0	56.0	10.0	24.0	38.0	52.5	0 1 9.79	.17	. . .	.57	0 0 33.39	5.16	
	14	γ Pegasi	23.0	36.2	49.4	2.0	15.0	27.3	41.0	0 6 1.99	.13	. . .	.57	0 5 25.55	5.41	
	15	α Cassiopeiæ	27.0	49.0	12.0	34.0	56.0	17.5	40.0	0 32 33.04	0.28	. . .	.59	0 31 57.33	+ 4.37	
	16	Polaris	5.0	5.0	10.0	13.0	58.0	53.0	56.0	1 6 2.86	4.86	. . .	.62	1 5 31.76	— 30.45	
	17	ϑ[1] Ceti	24.5	37.1	50.2	3.0	15.3	28.0	40.5	1 17 2.66	0.07	. . .	.63	1 16 26.10	+ 5.31	
	18	α Arietis	34.0	47.4	1.0	14.2	28.0	41.0	55.0	1 59 14.37	+ 0.15	. . .	36.67	1 58 37.85	+ 5.65	
Nov. 1	19	Polaris, S. P.	20.0	33.5	17.0	9.0	9.0	12.6	20.6	13 6 17.39	— 7.96	. . .	38.81	13 5 30.62	— 29.43	
	20	α Virginis	11.0	23.5	36.7	49.2	2.0	14.1	27.1	13 17 49.09	— 0.07	. . .	.81	13 17 10.21	+ 7.84	
	21	α Bootis	40.4	54.0	7.1	20.5	33.3	46.3	0.3	14 9 20.27	+ .09	. . .	.83	14 8 41.49	7.39	
	22	Sun, 1st L.	56.5	9.9	22.8	36.0	49.0	1.2	14.5	14 28 35.70	— .08	} . . .	38.83	14 29 3.64	. .	
	23	Sun, 2d L.	10.3	23.5	36.6	49.7	2.5	15.1	28.2	14 30 49.41	0.08					
	24	ε Pegasi	..	..	..	..	35.3	47.8	0.8	21 37 47.97	25.26	. . .	39.44	21 36 43.27	5.97	K
	25	Neptune	2.9	16.0	28.9	41.6	54.4	6.9	20.1	22 0 41.54	— 0.07	. . .	.45	22 0 2.02	. .	
	26	Mars, 1st L.	33.8	..	59.7	..	25.1	..	50.9	2 18 12.37	.00	} . . .	.54	2 17 33.55	. .	
	27	Mars, 2d L.	..	48.2	..	14.1	..	39.0	..	2 18 13.77	+ 0.05					
	28	γ Ceti	..	..	..	..	..	30.8	43.7	2 36 37.25	— 31.18	. . .	.54	2 35 26.53	5.31	
	29	α Ceti	22.7	35.7	48.6	1.0	13.3	25.4	38.3	2 55 0.71	0.02	. . .	.55	2 54 21.14	+ 5.37	
	30	Venus, 2d L.	36.2	49.4	2.1	14.2	27.1	39.1	52.1	12 11 14.31	0 0.04	— 1.43	.23	12 10 23.61	. .	B.
	31	Polaris, S. P.	..	33.0	16.6	10.0	9.5	13.0	21.0	13 10 17.18	4 7.40	. . .	.24	13 5 30.64	— 29.14	
	32	η Bootis	..	..	..	..	17.2	30.3	44.2	13 48 30.57	0 26.38	. . .	.26	13 47 24.93	+ 7.61	
	33	α Bootis	41.0	54.5	7.8	21.2	34.3	47.1	1.0	14 9 20.99	0.05	. . .	.26	14 8 41.78	7.38	
3	34	Sun, 1st L.	53.1	6.0	19.4	32.1	45.2	58.0	11.0	14 32 32.11	.08	} . . .	.26	14 33 59.86	. .	
	35	Sun, 2d L.	7.2	20.2	33.4	46.3	59.2	12.3	25.5	14 34 46.30	.08					
	36	α[2] Capricorni	37.1	50.2	3.3	16.0	29.0	41.2	54.5	20 10 15.90	.07	. . .	.52	20 9 36.31	7.47	
	37	Weisse XX, 545	50.0	2.9	16.0	29.0	41.6	54.3	7.2	20 22 28.71	.07	. . .	.52	20 21 49.12	7.40	
	38	Iris	14.4	28.0	41.0	54.0	6.6	19.2	32.2	20 25 53.63	— .15	. . .	.52	20 25 13.96	. .	
	39	α Cygni	1.1	19.2	37.0	54.0	12.0	29.0	47.2	20 36 54.21	+ .16	. . .	.52	20 36 14.85	4.12	
	40	Aquarii (7261)	41.5	54.9	9.3	20.1	32.9	45.0	58.0	20 49 19.96	— .14	. . .	.53	20 48 40.29	7.05	
	41	61[1] Cygni	56.7	13.0	29.2	45.0	0.5	16.0	32.3	21 0 44.67	+ .10	. . .	.53	21 0 5.24	5.33	
	42	ζ Cygni	24.3	38.5	53.1	7.9	22.0	36.0	50.5	21 7 7.47	+ .04	. . .	.53	21 6 27.98	5.12	
	43	ι Piscium	10.2	23.0	35.6	48.2	1.0	12.8	26.0	23 32 48.11	— .08	. . .	.58	23 32 8.45	5.75	
	44	α Andromedæ	30.1	44.5	59.0	13.0	27.0	41.0	55.2	0 1 12.83	+ .03	. . .	.59	0 0 33.27	5.20	
	45	γ Pegasi	26.1	39.2	52.3	5.1	18.0	30.7	44.0	0 6 5.06	— .04	. . .	.59	0 5 25.43	5.44	
	46	α Cassiopeiæ	29.5	52.0	15.0	37.0	59.0	20.0	43.0	0 32 36.50	+ .28	. . .	.60	0 31 57.18	4.43	
	47	β Ceti	57.9	11.0	24.2	38.0	51.0	4.0	17.2	0 36 37.61	— 0 0.17	. . .	.60	0 35 57.84	+ 5.54	
	48	Polaris	3.3	7.7	13.0	10.0	..	..	..	0 54 8.50	+12 0.95	. . .	39.61	1 5 29.84	— 29.00	
4	49	Lalande, 41229	37.0	25.8	14.1	2.0	50.1	37.0	26.0	21 3 1.71	0 0.62	. . .	40.10	21 2 22.23	2.57	K.
	50	Lalande, 41236	41.5	30.8	19.8	8.1	56.1	43.2	33.0	21 3 7.50	.63	. . .	.10	21 2 28.03	2.63	
	51	Draconis (7393)	37.2	25.8	13.8	0.8	48.0	32.9	21.2	21 10 59.96	+ .61	. . .	.10	21 10 20.47	— 2.34	
	52	ε Pegasi	44.9	58.2	10.8	23.6	36.0	48.4	1.4	21 37 23.33	—0 0.10	. . .	— 40.11	21 36 43.11	+0 6.01	

DATE.	CLOCK. At 20h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Oct. 29	f 36.38	g 0.038	+0.097	+0.125	0.000
Nov. 1	39.09	.038	0.028	0.208	0.000
2	39.31	.020	0.209	0.209	0.000
3	f 39.52	g 0.018	+0.108	+0.166	0.000

TE. 47.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h m. s.	m. s.	
. 4	1	μ Capricorni	1.4	14.8	27.8	40.6	53.2	6.0	19.2	21 45 40.43	— 0 0.19	. .	— 40.12	21 45 0.12	+0 6.89	K.
	2	Pegasi (7641)	33.6	46.5	59.5	12.0	24.8	37.1	50.5	21 50 12.00	.10	. .	.12	21 49 31.78	5.87	
	3	Aquarii (7640)	18.7	31.7	44.3	56.9	9.3	21.8	34.6	21 55 56.76	.16	. .	.12	21 55 16.48	+ 6.51	
	4	Neptune	2.3	15.2	28.2	41.2	53.9	6.2	19.7	22 0 40.96	.18	. .	.12	22 0 0.66	. .	
	5	Venus, 2d L.	5.3	18.0	31.0	43.2	56.0	8.0	21.0	12 14 43.21	0.15	— 1.39	.23	12 14 1.44	. .	B.
	6	Polaris, S. P.	21.3	33.3	16.0	9.5	9.3	13.0	21.6	13 6 17.71	8.04	. .	.25	13 5 29.42	— 28.61	
	7	η Bootis	25.4	39.0	52.2	5.4	18.2	31.5	45.0	13 48 5.24	0.07	. .	.26	13 47 24.91	+ 7.59	
5	8	Sun, 1st L.	49.0	2.0	15.2	28.3	40.7	53.7	7.0	14 40 27.09	.19	. .	.39	14 40 54.81	. .	
	9	Sun, 2d L.	3.5	17.0	30.0	43.0	55.6	8.5	22.0	14 42 42.80	.19	. .	.39			
	10	γ Aquilæ	3.5	16.2	29.0	42.0	54.5	7.0	20.0	19 39 41.74	.10	. .	.49	19 39 1.15	6.51	
	11	α Aquilæ	23.8	36.5	49.4	2.0	14.5	26.9	39.9	19 44 1.86	.11	. .	.49	19 43 21.26	6.65	
	12	β Aquilæ	52.5	5.5	18.2	31.0	43.1	55.3	8.3	19 48 30.56	.11	. .	.50	19 47 49.95	6.68	
	13	α^2 Capricorni	38.2	51.3	4.1	17.0	30.0	42.3	55.3	20 10 16.89	+ 0.18	. .	.51	20 9 36.20	7.50	
	14	Weisse XX, 779	26.0	39.0	52.0	..	..	30.0	43.0	20 31 2.00	— 2.44	. .	.51	20 30 23.93	7.35	
	15	Weisse XX, 767	..	..	..	..	..	3.4	16.5	20 31 9.95	— 32.14	. .	.51	20 29 57.30	7.35	
23	16	61^1 Cygni	58.0	13.8	30.0	46.0	1.3	17.0	33.1	21 0 45.60	+ .02	. .	.32	21 0 5.10	5.37	
	17	ζ Cygni	25.2	40.0	54.4	9.0	23.0	37.0	51.5	21 7 8.59	— .02	. .	.52	21 6 28.05	5.16	
	18	α Cephei	18.0	44.5	12.0	38.4	4.5	30.5	57.5	21 15 37.91	+ .25	. .	.53	21 14 57.63	2.06	
	19	β Aquarii	35.9	48.3	1.1	14.0	26.2	38.4	51.2	21 24 13.59	+ .16	. .	.53	21 23 32.90	6.69	
	20	ϵ Pegasi	45.6	58.5	11.1	24.0	36.5	48.8	2.0	21 37 23.79	.10	. .	.53	21 36 43.16	6.02	
	21	Neptune	2.0	15.0	28.0	41.0	53.5	6.2	19.0	22 0 40.67	.18	. .	.54	21 59 59.95	. .	
	22	α Andromedæ	31.0	46.0	0.0	14.0	28.5	42.0	56.5	0 1 14.00	.03	. .	.58	0 0 33.39	5.22	
	23	γ Pegasi	27.2	40.3	53.5	6.5	19.1	32.0	45.3	0 6 6.27	— .09	. .	.58	0 5 25.60	5.46	
	24	α Cassiopeiæ	30.3	53.2	16.0	38.0	0.0	22.0	44.5	0 33 37.71	+ 0.16	. .	.59	0 32 57.28	4.45	
	25	β Ceti	59.0	12.5	26.0	39.0	52.0	..	..	0 36 25.70	12.46	. .	.59	0 35 57.57	+ 5.55	
	26	Polaris	4.3	10.6	14.3	15.0	8.0	52.0	1.6	1 6 6.54	+ 7.43	. .	.60	1 5 33.37	— 28.49	
24	27	Mars, 1st L.	31.5	..	57.5	..	23.0	..	49.0	2 14 10.25	— 0.09	} . .	.62	2 13 30.26	. .	
	28	Mars, 2d L.	..	46.0	..	12.1	..	37.0	..	2 14 11.70	.09	}				
	29	α Ceti	24.3	37.2	50.0	2.3	14.7	27.0	40.0	2 55 2.21	0 0.12	. .	.64	2 54 21.45	+ 5.35	
	30	Polaris, S. P.	..	35.6	20.3	13.3	13.0	16.5	25.3	13 10 20.67	4 6.85	. .	40.84	13 5 32.98	— 28.37	
11	31	Sun, 1st L.	59.0	12.5	25.6	38.8	51.8	4.0	18.0	15 4 38.53	0 0.29	} . .	45.55	15 5 0.72	. .	
	32	Sun, 2d L.	15.0	28.2	41.5	55.0	8.0	20.5	34.0	15 6 54.60	.29	}				
	33	β Aquarii	41.3	53.9	6.6	19.3	31.9	44.0	56.8	21 24 19.11	0.24	. .	46.14	21 23 32.83	+ 6.78	K.
	34	Neptune	..	..	32.8	46.0	58.7	..	24.4	22 0 55.47	9.99	. .	.16	21 59 59.32	. .	
	35	Saturn, 1st L.	57.3	..	23.1	..	48.5	..	13.9	22 35 35.70	0.28	} . .	.18	22 34 49.74	. .	
	36	Saturn, 2d L.	..	11.2	..	36.9	..	2.0	..	22 35 36.70	.23	}				
	37	α Pegasi	19.1	32.1	45.4	58.3	11.1	23.7	36.8	22 57 58.07	.13	. .	.20	22 57 11.74	5.64	
	38	ι Piscium	16.8	29.7	42.2	55.0	7.4	19.4	32.5	23 32 54.71	.18	. .	.22	23 32 8.31	5.83	
	39	α Andromedæ	36.8	51.2	5.5	19.9	33.9	47.6	2.3	0 1 19.60	.11	. .	.24	0 0 33.25	5.27	
	40	γ Pegasi	32.8	46.0	59.3	12.2	25.0	37.4	50.8	0 6 11.93	.13	. .	.24	0 5 25.56	5.49	
	41	β Ceti	4.4	18.0	31.2	44.6	57.6	10.5	24.0	0 36 44.33	.31	. .	.26	0 35 57.76	5.59	
	42	ϑ^1 Ceti	34.4	47.4	0.4	12.9	25.5	37.7	50.7	1 17 12.71	.25	. .	.29	1 16 26.17	5.34	
	43	Arietis, (609)	26.9	39.9	52.9	5.6	18.2	30.5	43.8	1 52 5.40	.15	. .	.31	1 51 18.94	5.44	
	44	α Arietis	43.5	57.2	10.9	24.7	38.2	51.2	5.2	1 59 24.41	.09	. .	.31	1 58 38.01	5.60	
	45	Mars, 1st L.	17.4	..	43.4	..	8.6	..	34.5	2 6 55.97	.16	} . .	.31	2 6 10.20	. .	
	46	Mars, 2d L.	..	31.8	..	57.6	..	22.6	..	2 6 57.33	.11	}				
	47	Weisse II, 155	46.8	59.6	12.5	25.4	38.2	50.7	3.5	2 11 25.24	.14	. .	.31	2 10 38.79	5.45	
	48	α Ceti	30.0	42.7	55.3	8.0	20.4	32.7	45.5	2 55 7.79	.10	. .	46.35	2 54 21.25	5.30	
15	49	ζ Aquarii	12.0	25.2	37.4	49.8	2.2	14.3	27.1	22 21 49.71	.21	. .	49.34	22 21 0.16	6.28	B.
	50	η Aquarii	44.5	57.0	10.0	22.3	35.0	47.0	59.5	22 28 22.17	.21	. .	.35	22 27 32.61	6.24	
	51	ζ Pegasi	4.3	17.0	30.0	42.8	55.2	7.5	21.5	22 34 42.61	.15	. .	.35	22 33 53.11	5.90	
	52	α Piscis Australis	20.2	35.0	49.3	4.1	18.1	32.3	47.2	22 50 3.75	— 0 0.37	. .	— 49.36	22 49 14.02	+0 6.96	

DATE.	CLOCK. At 21h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Nov. 4	f 40.10	g 0.018	—0.141	+0.207	0.000
5	40.52	.025	—0.134	+0.198	0.000
11	f 46.13	g 0.069			

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s	h. m. s.	m. s.
Nov. 15	1	α Pegesi	22.1	35.5	48.5	1.3	14.0	27.0	40.0	22 58 1.20	— 0.13	. .	— 49.37	22 57 11.70	+0 5.70
	2	κ Piscium	20.1	33.1	45.2	58.2	11.0	23.0	36.0	23 19 58.09	.10	. .	.38	23 19 8.51	5.94
	3	ι Piscium	20.0	33.0	45.0	58.0	10.5	22.5	35.5	23 32 57.86	— .18	. .	.39	23 32 8.29	5.87
	4	α Cassiopeiæ	39.0	2.0	24.0	46.2	8.5	30.0	53.0	0 32 46.10	+ .22	. .	49.43	0 31 56.89	4.59
16	5	ζ Pegasi	5.6	18.3	31.3	44.1	56.7	9.0	21.9	22 34 43.84	— .15	. .	50.74	22 33 52.95	5.92
	6	Moon, 1st L.	0.0	13.2	26.3	39.3	51.9	4.7	17.9	22 42 39.04	.23	+ 67.33	.74	22 42 55.40	. . .
	7	α Pegasi	23.7	36.8	49.9	2.8	15.4	28.2	41.6	22 58 2.63	.13	. .	50.74	22 57 11.76	5.71
17	8	β Aquarii	46.1	59.0	11.4	24.2	36.7	49.0	2.0	21 24 24.06	.12	. .	51.13	21 23 32.81	6.86
	9	ϵ Pegasi	56.0	8.9	22.0	34.0	47.0	59.0	12.0	31 36 34.13	.08	. .	.14	21 35 42.91	6.20
	10	ζ Pegasi	6.0	19.0	31.8	44.5	57.0	9.4	22.3	22 34 44.29	.07	. .	.18	22 33 53.04	5.93
	11	λ Aquarii	54.0	7.0	19.7	32.2	44.8	57.1	10.1	22 45 32.13	.13	. .	.19	22 44 40.91	6.36
	12	α Piscis Australis	22.0	36.5	51.1	6.0	20.0	34.1	49.0	22 50 5.53	.20	. .	.19	22 49 14.14	6.99
	13	γ Piscium	31.0	43.9	56.3	9.0	21.3	33.3	46.3	23 10 8.73	.10	. .	.20	23 9 17.43	6.16
	14	λ Piscium	31.1	44.0	57.0	9.3	22.0	34.0	46.2	23 35 9.09	.10	. .	.22	23 34 17.67	6.01
	15	Moon, 1st L.	28.5	41.3	54.5	7.3	20.0	32.5	46.0	23 39 7.30	.11	+ 67.80	.22	23 39 23.77	. . .
	16	ω Piscium	44.3	57.0	10.0	22.3	35.0	47.0	0.0	23 52 22.23	.09	. .	.23	23 51 30.91	5.83
	17	α Andromedæ	41.5	56.0	10.5	25.0	38.9	53.0	7.0	0 1 24.56	.02	. .	.23	0 0 33.31	5.33
	18	γ Pegasi	37.5	51.0	4.0	17.0	39.7	42.0	55.5	0 6 16.67	.06	. .	.24	0 5 25.37	5.56
	19	α Cassiopeiæ	41.0	4.0	26.0	48.2	10.5	32.0	54.5	0 32 48.03	— 0.13	. .	.25	0 31 56.65	+ 4.62
	20	Polaris	4.3	15.0	16.3	17.0	13.0	57.0	11.0	1 6 10.51	+ 6.05	. .	.27	1 5 25.29	— 24.34
	21	ϑ^1 Ceti	39.5	52.1	5.0	18.0	30.5	42.9	56.0	1 17 17.71	— 0.13	. .	.28	1 16 26.30	+ 5.36
	22	Mars, 1st L.	31.5	..	57.3	..	23.0	..	48.3	2 1 10.01	.08	. .	.31	2 0 29.13	. . .
	23	Mars, 2d L.	..	45.5	..	11.3	..	36.2	..	2 1 11.00	.04				
	24	γ Ceti	40.5	53.0	6.0	18.9	31.0	43.0	55.9	2 36 18.24	.10	. .	.33	2 35 26.81	5.24
	25	α Ceti	35.0	48.0	0.5	13.0	25.5	37.5	50.5	2 55 12.86	.09	. .	.34	2 54 21.43	5.26
	26	α Persei	25.0	45.0	4.0	23.5	42.2	1.0	21.0	3 14 23.10	.08	. .	.36	3 13 31.66	6.43
	27	η Tauri	39.9	53.0	6.5	20.0	33.5	47.0	1.0	3 39 20.00	.03	. .	.37	3 38 28.60	5.87
	28	γ^1 Eridani	10.0	23.0	36.2	49.0	2.0	14.6	27.7	3 51 48.93	.14	. .	.38	3 50 57.41	4.61
	29	α Tauri	26.0	39.0	52.0	5.0	18.0	30.0	43.5	4 28 4.79	.06	. .	.20	4 27 13.33	5.79
	30	β Orionis	28.5	41.2	54.0	6.6	19.0	31.0	44.2	5 8 6.36	.13	. .	.43	5 7 14.80	4.81
	31	β Tauri	50.8	5.0	19.5	34.0	48.0	2.0	17.0	5 17 33.76	.02	. .	.43	5 16 42.31	6.51
	32	δ Orionis	29.0	42.0	54.2	7.0	19.5	31.5	44.0	5 25 6.74	.11	. .	.44	5 24 15.19	5.24
	33	ϵ Orionis	45.0	57.3	10.0	22.5	35.0	47.2	0.0	5 29 22.43	.11	. .	51.44	5 28 30.88	5.20
18	34	Saturn, 1st L.	16.0	..	41.8	..	7.2	..	32.8	22 55 54.45	.15	. .	52.03	22 35 2.79	. . .
	35	Saturn, 2d L.	17.2	..	42.8	..	8.3	..	33.7	22 35 55.50	.15				
	36	α Pegasi	24.8	38.1	50.9	4.1	16.7	29.5	42.7	22 58 3.83	.06	. .	52.04	22 57 11.73	5.74
20	37	ζ Pegasi	7.8	20.8	33.8	46.5	58.9	11.2	24.2	22 34 46.17	0.07	+ 70.54	53.13	22 33 52.97	5.97
	38	Saturn, 1st L.	..	..	50.4	3.4	16.0	28.0	41.0	22 36 15.80	12.89				
	39	Saturn, 2d L.	..	..	51.5	4.4	16.8	29.6	42.3	22 36 16.92	12.89	. .	.13	22 35 10.34	. . .
	40	α Arietis	50.4	4.3	18.2	31.8	45.0	58.2	11.8	1 59 31.39	0.03	. .	.21	1 58 38.15	5.60
	41	Moon, 1st L.	1.0	14.5	27.9	41.0	54.3	6.9	20.5	2 36 40.86	0.07	. .	.22	2 37 58.11	. . .
	42	α Persei	..	46.8	6.0	25.0	43.9	3.0	21.8	3 14 34.42	9.55	. .	53.24	3 13 31.63	6.31
22	43	α Andromedæ	45.0	0.0	14.1	28.0	42.2	56.0	10.5	0 1 27.97	0.02	. .	54.96	0 0 32.99	5.40
	44	γ Pegasi	41.2	54.0	7.5	20.3	33.3	46.0	59.0	0 6 20.19	— .06	. .	.96	0 5 25.17	5.61
	45	α Cassiopeiæ	44.2	7.0	29.2	52.0	14.0	35.2	58.0	0 32 51.37	+ 0.13	. .	.97	0 31 56.53	4.72
	46	β Ceti	..	..	41.0	53.0	6.1	19.0	32.5	0 37 6.32	— 13.39	. .	.97	0 35 57.96	+ 5.68
	47	Polaris	9.0	13.0	19.0	20.0	14.0	58.0	10.9	1 6 11.86	+ 6.08	. .	54.99	1 5 22.95	— 32.35
26	48	Mars, 1st L.	14.5	..	40.2	..	6.0	..	31.2	1 55 52.97	0.00	. .	57.45	1 54 56.04	. . .
	49	Mars, 2d L.	..	28.5	..	54.3	..	19.1	..	1 55 53.97	.05				
	50	α Arietis	54.5	8.2	22.0	26.0	49.2	2.0	16.0	1 59 35.41	.02	. .	.45	1 58 37.98	+ 5.61
	51	γ Ceti	46.3	59.3	12.0	24.3	37.0	49.0	1.5	2 36 24.20	.02	. .	.46	2 35 26.76	5.22
	52	α Ceti	41.1	53.7	6.2	19.0	31.0	43.2	56.3	2 55 18.65	+0 0.02	. .	— 57.47	2 54 21.19	+0 5.23

DATE.	CLOCK. At 22h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Nov. 15	*f* 49.33	g0.045	—0.205	+0.286	0.000
16	50.72	.045			
17	51.16	.039	—0.104	+0.161	0.000
18	52.01	.025			
20	53.12	.025			
22	54.91	.025	+0.104	+0.162	0.000
26	*f* 57.35	g0.025	+0.017	+0.017	0.000

TE. 47.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	H. M. s.	M. s	s.	s.	H. M. s.	M. s.	
. 26	1	α Persei	31.5	51.0	10.5	30.0	49.0	7.3	27.0	3 14 29.47	+ 0 0.04	. . .	— 57.43	3 13 32.03	+0 6.37	B.
	2	η Tauri	45.0	59.0	13.0	26.5	40.0	53.3	7.2	3 39 26.29	.02	. . .	.49	3 38 28.82	5.79	
	3	γ¹ Eridani	16.0	29.1	42.0	55.0	8.0	20.5	34.0	3 51 54.94	.01	. . .	.50	3 50 57.45	4.54	
	4	α Tauri	32.0	45.0	58.0	11.2	24.0	36.5	50.0	4 28 10.96	.02	. . .	.51	4 27 13.47	5.67	
	5	β Tauri	57.0	11.2	26.0	40.1	54.0	8.0	22.5	5 17 39.83	.02	. . .	.53	5 16 42.31	6.33	
	6	δ Orionis	35.2	48.0	1.0	13.0	26.0	37.5	50.4	5 25 13.01	.02	. . .	.53	5 24 15.50	5.08	
	7	ε Orionis	51.0	3.7	16.0	29.0	41.3	53.3	6.3	5 29 28.66	.02	. . .	.54	5 28 31.14	5.03	
	8	α Orionis	17.0	30.0	42.5	55.3	8.0	20.0	33.0	5 47 55.11	+ .02	. . .	57.54	5 46 57.59	5.49	
29	9	ι Piscium	31.4	44.4	56.8	9.5	22.0	34.2	47.0	22 32 9.33	— 0.09	. . .	1.11	22 32 8.13	6.03	K.
	10	Flora	..	31.3	..	..	..	..	..	4 38 31.30	+ 25.67	. . .	.28	4 38 55.69	. .	
	11	Weisse IV, 957	..	33.2	46.0	59.2	11.8	24.3	37.6	4 44 5.35	— 6.53	. . .	.28	4 43 57.54	5.56	
30	12	α Piscis Australis	31.5	46.0	1.0	15.5	..	..	..	22 48 53.50	+ 21.61	. . .	.44	22 49 13.65	7.21	B.
	13	α Pegasi	34.3	47.3	0.5	13.2	26.2	38.5	52.0	22 57 13.14	— 0.06	. . .	.45	22 57 11.63	5.90	
	14	ψ¹ Aquarii	18.4	31.3	44.1	57.0	9.5	22.0	35.0	23 7 56.76	.13	. . .	.45	23 7 55.18	6.39	
	15	υ Pegasi	9.0	23.0	36.5	50.0	3.5	16.5	30.5	23 17 49.86	.03	. . .	.46	23 17 48.37	5.52	
	16	Piscium (8303)	41.5	54.3	7.0	19.5	32.0	44.0	57.0	23 45 19.33	.10	. . .	.48	23 45 17.75	5.94	
	17	ω Piscium	54.4	7.3	20.0	32.5	45.0	57.0	10.0	23 51 32.31	.08	. . .	.49	23 51 30.74	5.84	
	18	α Andromedæ	52.0	6.0	20.6	35.0	49.0	2.5	17.0	0 0 34.59	.02	. . .	.49	0 0 33.08	5.50	
	19	γ Pegasi	48.0	1.0	14.0	27.0	39.5	52.0	5.5	0 5 26.71	— .06	. . .	.50	0 5 25.15	5.70	
	20	α Cassiopeiæ	51.5	14.0	36.0	58.0	20.5	42.0	5.0	0 31 58.14	+ .13	. . .	1.51	0 31 56.76	4.88	
. 4	21	ε Andromedæ	53.1	7.8	22.3	36.2	50.8	4.3	18.9	0 30 36.20	.17	. . .	3.88	0 30 32.49	5.48	K.
	22	β Ceti	21.1	34.3	47.7	0.9	14.3	26.8	40.3	0 36 0.77	.66	. . .	.88	0 35 57.55	5.81	
	23	Piscium (229)	6.0	20.0	34.6	48.5	2.2	15.9	30.2	0 41 48.2	.19	. . .	.88	0 41 45.51	5.56	
	24	μ Andromedæ	36.8	52.9	9.0	24.8	40.6	55.9	12.2	0 48 24.60	.05	. . .	.88	0 48 20.77	5.48	
6	25	Flora	34.0	47.0	0.0	13.0	25.5	37.5	51.0	4 31 12.57	+ 0.32	. . .	.43	4 31 8.46	. .	B.
	26	Weisse IV, 794	..	..	59.5	13.0	25.4	38.0	51.5	4 36 25.48	— 12.61	. . .	.43	4 36 9.44	5.49	
	27	Weisse IV, 824	..	36.0	..	2.0	14.5	27.0	40.5	4 38 12.00	— 10.06	. . .	.43	4 37 58.51	5.49	
	28	β Orionis	40.0	53.0	5.5	18.2	31.0	43.3	56.3	5 7 18.19	+ 0.55	. . .	.43	5 7 15.31	4.55	
	29	β Tauri	3.0	17.5	32.0	46.0	0.0	13.8	28.5	5 16 45.83	.28	. . .	.43	5 16 42.68	6.15	
	30	δ Orionis	41.0	53.5	6.2	19.0	31.5	44.0	56.5	5 24 18.81	.47	. . .	.43	5 24 15.85	4.94	
	31	ε Orionis	56.8	9.4	22.0	34.5	47.0	59.0	12.0	5 28 34.39	.46	. . .	.43	5 28 31.42	4.89	
	32	α Orionis	23.0	35.4	48.0	1.0	13.5	26.0	38.6	5 47 0.79	.40	. . .	.43	5 46 57.76	5.31	
	33	μ Geminorum	9.1	23.0	37.0	50.5	4.0	17.0	30.9	6 13 50.21	.24	. . .	.43	6 13 47.02	6.04	
	34	α Canis Majoris	52.0	5.0	18.4	31.3	44.3	47.0	0.3	6 38 31.19	.30	. . .	3.43	6 38 28.06	3.39	
7	35	α Andromedæ	53.8	8.7	22.8	37.1	50.9	4.8	19.7	0 0 36.83	.17	. . .	4.05	0 0 32.95	5.59	K.
	36	γ Pegasi	49.8	3.2	16.4	28.9	41.9	54.3	7.7	0 5 28.89	+ .32	. . .	.05	0 5 25.16	5.77	
	37	α Cassiopeiæ	53.5	16.4	38.7	0.8	22.8	44.4	7.4	0 32 0.57	— .34	. . .	.05	0 31 56.18	5.05	
	38	ϑ¹ Ceti	51.3	4.4	17.1	29.8	42.4	54.8	7.8	1 16 29.66	+ .38	. . .	.05	1 16 25.99	5.50	
	39	α Arietis	0.8	14.6	28.4	41.9	55.3	8.5	22.6	1 58 41.73	.24	. . .	.05	1 58 37.92	5.65	
	40	γ¹ Eridani	22.3	35.0	48.3	1.2	13.9	26.3	39.7	3 51 0.96	+ 0.61	. . .	.05	3 50 57.52	4.49	
	41	Flora	..	..	55.4	8.3	21.1	33.5	46.8	4 30 21.02	— 12.59	. . .	.05	4 30 4.38	. .	
	42	Weisse IV, 722	15.9	28.9	42.1	55.3	7.8	20.4	33.8	4 33 54.89	+ 0.33	. . .	4.05	4 33 51.17	5.47	
8	43	ε Eridani	12.3	25.0	37.6	50.5	3.0	15.2	28.5	3 25 50.30	.41	. . .	3.63	3 25 47.08	4.72	B.
	44	η Tauri	51.1	5.0	18.5	32.3	46.0	59.1	13.5	3 38 32.21	+ 0.23	. . .	.63	3 38 28.81	5.73	
	45	γ¹ Eridani	..	..	..	..	13.5	26.0	39.2	3 51 26.23	— 25.28	. . .	.64	3 50 57.31	4.49	
	46	o² Eridani	43.0	56.0	8.3	21.3	33.5	46.0	59.0	4 9 21.01	+ 0.40	. . .	.64	4 9 21.01	4.67	
	47	Flora	..	..	51.0	4.0	16.5	28.8	42.0	4 29 16.46	— 12.69	. . .	.64	4 29 0.13	. .	
	48	β Orionis	..	53.0	6.0	18.8	31.0	43.5	56.4	5 7 24.78	— 5.94	. . .	.64	5 7 15.20	4.53	
	49	β Tauri	3.0	17.4	32.0	46.3	0.5	14.0	29.0	5 16 46.03	+ 0.13	. . .	.64	5 16 42.52	6.13	
	50	δ Orionis	41.3	54.1	7.0	19.5	31.7	43.5	56.5	5 24 19.09	.34	. . .	.64	5 24 15.79	4.92	
	51	ε Orionis	57.0	10.0	22.3	35.0	47.3	59.5	12.5	5 28 34.80	.34	. . .	.64	5 28 31.50	4.87	
	52	α Orionis	23.0	36.0	49.0	1.5	14.0	26.0	39.0	5 47 1.21	+ 0 0.29	. . .	— 3.64	5 46 57.86	+0 5.28	

DATE.	CLOCK. At 23h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Nov. 29	*f* 1.12	*g* 0.028			
30	1.45	.033	—0.104	+0.161	0.000
Dec. 4	3.88	.020			
6	3.43	.000	+0.468	—0.549	0.000
7	4.05	.000			
8	*f* 3.62	*g* 0.005	+0.341	—0.391	0.000

DATE.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observer.
			s.	s.	s.	s.	s.	s.	s.	H. M. s.	M. s.	s.	s.	H. M. s.	M. s.	
Dec. 14	1	α Arietis	5.6	19.3	33.3	46.8	0.2	13.2	27.0	1 58 46.49	+ 0 0.22	. .	+ 8.90	1 58 37.81	+0 5.70	K.
	2	α Orionis	27.7	41.5	54.4	6.8	19.2	31.3	44.6	5 47 6.49	.59	. .	9.13	5 46 57.95	5.21	
	3	μ Geminorum	15.4	29.0	42.9	56.3	9.8	22.8	36.8	6 13 56.14	.23	. .	.15	6 13 47.22	5.93	
15	4	Moon, 1st L.	42.5	55.4	8.3	21.5	34.0	46.5	59.4	0 16 21.08	+ 0.74	. .	.79	0 17 19.22	. .	B.
	5	α Cassiopeiæ	0.0	22.0	45.0	7.2	29.3	51.0	14.0	0 32 6.93	— 1.11	. .	.80	0 31 56.02	+ 5.25	
	6	Polaris	8.0	11.0	13.0	12.0	7.0	53.0	7.0	1 6 7.29	— 48.23	. .	.84	1 5 9.22	— 8.24	
	7	ϑ¹ Ceti	57.0	10.0	22.5	35.5	48.0	0.0	13.0	1 16 35.14	+ 0.97	. .	9.85	1 16 26.26	+ 5.57	
	8	Flora	32.3	45.2	58.2	11.5	24.5	37.0	50.3	4 22 11.29	.43	. .	10.05	4 22 1.67	. .	
	9	α Tauri	44.0	57.2	10.2	23.5	36.3	49.0	2.3	4 27 23.21	.39	. .	.06	4 27 13.54	5.51	
	10	Weisse IV, 733	1.5	14.3	28.0	41.0	53.2	6.0	19.2	4 33 40.46	+ 0.44	. .	.06	4 33 30.84	5.41	
	11	Weisse IV, 794	..	53.5	6.4	19.3	32.2	45.0	58.0	4 36 25.73	— 6.04	. .	.06	4 36 9.63	5.42	
	12	Weisse IV, 824	29.5	42.4	56.0	8.6	21.4	34.0	47.4	4 38 8.47	+ 0.43	. .	.06	4 37 58.84	5.42	
	13	β Orionis	46.0	59.2	12.3	24.8	37.4	50.0	3.0	5 7 24.67	.95	. .	.09	5 7 15.53	4.47	
	14	β Tauri	10.0	24.5	38.5	53.0	7.0	21.0	35.5	5 16 52.79	.07	. .	.11	5 16 42.75	6.04	
	15	δ Orionis	47.6	0.0	13.0	25.3	38.0	50.0	3.0	5 24 25.27	.78	. .	.11	5 24 15.94	4.84	
	16	ε Orionis	3.0	16.0	28.5	41.3	53.5	6.0	18.5	5 28 40.97	.79	. .	.12	5 28 31.64	4.79	
	17	α Orionis	29.5	42.3	55.0	7.5	20.3	32.5	45.7	5 47 7.54	0.60	. .	.14	5 46 58.00	5.19	
	18	α Canis Majoris	58.0	11.2	25.0	38.0	51.0	3.5	16.5	6 38 37.60	1.15	. .	.19	6 38 28.56	3.94	
	19	ε Canis Majoris	6.2	21.0	35.6	49.8	3.5	17.5	32.2	6 52 49.40	1.48	. .	.21	6 52 40.67	3.22	
	20	δ Geminorum	32.0	46.0	0.3	14.0	27.0	40.0	54.0	7 11 13.33	.24	. .	.23	7 11 3.34	5.99	
	21	β Geminorum	29.0	43.0	58.0	12.0	55.5	40.0	54.2	7 36 11.67	+ 0.06	. .	10.24	7 36 1.49	6.24	
18	22	α Cassiopeiæ	5.4	28.1	50.2	12.5	34.8	56.1	18.9	0 32 12.29	— 0 1.12	. .	14.99	0 31 56.18	+ 5.32	K.
	23	Polaris	6.5	..	..	..	15.0	..	..	0 58 10.75	+ 7 11.23	. .	15.03	1 5 6.95	— 6.20	
	24	ϑ¹ Ceti	..	..	27.3	40.3	52.8	5.0	17.9	1 16 52.66	— 0 11.71	. .	.04	1 16 25 91	+ 5.60	
	25	γ Ceti	3.2	15.9	28.8	41.2	53.7	5.2	18.5	2 35 40.93	+ 0.72	. .	.13	2 35 26.52	5.29	
	26	α Ceti	..	10.9	23.4	36.2	48.6	0.4	13.5	2 54 42.17	— 5.59	. .	.15	2 54 21.43	5.26	
	27	Moon, 1st L.	51.7	5.1	18.3	31.9	44.9	57.9	11.3	3 10 31.59	+ 0.44	. .	.17	3 11 26.82	. .	
	28	α Tauri	..	2.1	15.8	28.8	41.7	54.4	7.7	4 27 35.08	— 6.14	. .	.26	4 27 13.68	5.50	
	29	Flora	6.5	19.8	32.9	45.9	58.6	10.9	24.4	4 34 45.57	+ 0.44	. .	.27	4 34 30.74	. .	
21	30	Weisse IV, 794	..	..	..	24.3	37.7	49.9	3.0	4 36 43.72	— 18.91	. .	.27	4 36 9.54	5.41	
	31	Weisse IV, 824	..	..	..	13.8	26.7	39.3	52.7	4 38 33.12	18.91	. .	15.27	4 37 58.94	5.40	
	32	α Cassiopeiæ	10.0	32.0	54.5	17.0	39.0	0.5	23.0	0 32 16.57	1.27	. .	19.40	0 31 55.90	+ 5.41	B.
	33	Polaris	14.3	23.0	27.0	27.0	25.0	7.6	24.0	1 6 21.13	— 57.23	. .	.45	1 5 4.45	— 4.26	
	34	α Arietis	16.5	30.0	43.0	57.0	11.0	24.0	38.0	1 58 57.07	+ 0.34	. .	.51	1 58 37.90	+ 5.76	
	35	γ Ceti	7.5	20.2	33.0	45.5	58.2	10.2	23.2	2 35 45.37	.89	. .	.55	2 35 26.71	5.32	
	36	α Ceti	2.0	15.0	27.5	40.9	52.5	5.0	18.0	2 54 40.00	+ .86	. .	.47	2 54 21.29	5.28	
	37	α Persei	54.0	14.0	33.5	53.0	12.0	30.5	49.0	3 13 52.29	— .81	. .	.59	3 13 31.89	6.41	
	38	η Tauri	6.5	20.2	35.0	48.0	2.0	15.0	29.0	3 38 47.96	+ 0.21	. .	.59	3 38 28.58	5.72	
	39	γ¹ Eridani	37.0	50.3	3.0	16.0	29.1	41.5	54.5	3 51 15.91	1.33	. .	.63	3 50 57.61	4.50	
	40	Flora	42.0	55.0	8.0	21.0	34.3	46.0	0.0	4 17 20.89	0.55	. .	.66	4 17 1.78	. .	
	41	α Tauri	53.0	6.0	20.0	33.0	46.0	58.0	12.0	4 27 32.57	0.51	. .	.67	4 27 13.41	5.49	
	42	β Orionis	56.0	9.0	21.0	34.0	46.5	59.0	12.0	5 7 33.93	1.18	. .	.71	5 7 15.40	4.44	
	43	β Tauri	19.5	34.0	48.2	2.3	16.5	31.0	45.0	5 17 2.36	+ 0.13	. .	19.73	5 16 42.76	5.99	
24	44	Piscium (311)	43.3	..	8.9	..	..	45.9	59.0	0 58 24.27	— 2.23	. .	24.15	0 57 57.89	5.82	K.
	45	Piscium (312)	..	58.3	..	23.8	35.9	..	..	0 58 19.33	+ 4.93	. .	.15	0 58 0.11	5.82	
	46	ζ Piscium	..	46.2	..	11.4	..	36.3	..	1 6 11.30	+ 0.79	. .	.16	1 5 47.93	5.78	
	47	Piscium (369)	..	..	0.5	..	25.3	..	50.6	1 6 25.47	— 11.91	. .	.16	1 5 49.40	5.79	
	48	ϑ¹ Ceti	..	23.3	36.2	49.2	1.6	13.9	27.1	1 16 55.22	— 5.15	. .	.17	1 16 25.90	5.68	
	49	γ Ceti	12.1	24.9	37.7	50.1	2.6	14.4	27.4	2 35 49.89	+ 0.89	. .	.25	2 35 26.53	5.33	
	50	α Ceti	6.9	19.4	32.3	44.9	57.4	9.3	22.3	2 54 44.64	+ 0.86	. .	.26	2 54 21.24	5.29	
	51	Flora	..	..	..	..	34.9	..	..	4 15 34.90	— 12.48	. .	.36	4 14 58.06	. .	
	52	α Tauri	..	..	25.5	37.8	50.3	3.1	16.4	4 27 50.62	— 0 12.53	. .	— 24.37	4 27 13.72	0 5.49	

DATE.	CLOCK. At 0h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Dec. 14	f 8.78	g 0.060			
15	9.77	.063	+0.760	—1.280	0.000
18	14.96	.070	0.777	1.300	0.000
21	19.37	.067	+0.954	—1.520	0.000
24	f 24.10	g 0.052			

ATE. 847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CORRECTIONS FOR Inst.	Semi-diam.	Clock.	Observed R. Ascension.	Reduction to 1850.0	Observers.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	m. s.	s.	s.	h. m. s.	m. s.	
ec. 28	1	η Tauri	16.5	30.5	44.0	58.0	11.0	24.0	38.0	3 39 57.43	+ 0 0.25	. . .	— 28.86	3 39 28.82	+0 5.75	B
	2	γ^1 Eridani	46.5	59.5	12.5	25.3	38.2	50.5	4.0	3 52 25.21	1.18	. . .	.87	3 51 57.52	4.53	
	3	Flora	31.0	44.2	57.2	..	..	..	..	4 13 44.13	26.41	. . .	.89	4 13 41.65	. .	
	4	α Tauri	3.0	16.0	29.0	42.2	55.1	7.5	21.1	4 27 41.99	0.44	. . .	.91	4 27 13.52	5.48	
	5	β Orionis	5.2	18.0	31.0	43.9	56.0	8.4	21.5	5 7 43.43	1.04	. . .	.94	5 7 15.53	4.42	
	6	β Tauri	28.5	43.0	59.0	12.0	26.0	39.5	54.0	5 17 11.43	0.09	. . .	.95	5 16 42.57	5.95	
	7	δ Orionis	6.3	19.0	31.7	44.0	56.3	8.8	21.5	5 25 43.94	.86	. . .	.96	5 25 15.84	4.76	
	8	ε Orionis	21.8	34.5	47.0	0.0	12.1	24.3	37.2	5 28 59.56	.88	. . .	.96	5 28 31.48	4.70	
	9	α Orionis	48.3	1.0	14.0	26.5	39.1	51.0	4.2	5 47 26.30	.67	. . .	28.98	5 46 57.99	5.07	
	10	μ Geminorum	35.1	49.2	2.5	16.0	29.5	42.5	57.0	6 14 15.97	0.27	. . .	29.00	6 13 47.24	5.74	
	11	α Canis Majoris	17.0	30.3	43.4	56.5	9.5	22.0	35.5	6 38 56.31	1.25	. . .	.02	6 38 28.54	3.78	
	12	ε Canis Majoris	25.0	39.5	54.0	8.0	22.0	36.5	51.0	6 53 8.00	1.62	. . .	.04	6 52 40.58	3.05	
	13	Jupiter, 1st L.	6.0	..	33.5	..	0.0	..	27.2	7 12 46.68	0.27	. . .	.06	} 7 12 19.61	. .	
	14	Jupiter, 2d L.	..	23.2	..	50.1	..	17.1	..	7 12 50.13	.27	. . .	.06			
	15	α^2 Geminorum	40.0	55.0	10.0	25.0	39.5	53.4	9.0	7 25 24.56	.03	. . .	.07	7 24 55.46	6.16	
	16	α Canis Minoris	12.8	26.0	38.0	50.5	3.0	15.3	28.0	7 31 50.51	.72	. . .	.07	7 31 22.16	4.93	
	17	β Geminorum	48.0	2.8	16.7	31.0	45.0	59.0	13.4	7 36 30.84	0.08	. . .	.08	7 36 1.84	5.95	
	18	15 Argus	52.2	6.0	20.1	33.9	47.2	0.5	14.7	8 1 33.51	+ 0 1.44	. . .	29.10	8 1 5.85	3.55	
29	19	Polaris	..	..	..	..	27.5	15.0	..	1 18 21.25	—12 51.98	. . .	30.73	1 4 58.54	2.33	K
	20	ϑ^1 Ceti	17.3	30.2	42.9	55.5	8.2	20.2	33.4	1 16 55.38	+ 0 1.20	. . .	.73	1 16 25.85	5.74	
	21	α Arietis	27.2	41.2	54.8	8.4	21.9	34.8	49.0	1 59 8.17	+ 0.32	. . .	.77	1 58 37.72	5.85	
	22	Mars, 1st L.	9.0	..	35.6	..	1.2	13.9	27.2	2 9 53.31	— 4.56	. . .	.78	} 2 9 18.38	. .	
	23	Mars, 2d L.	..	23.1	..	49.3	..	..	..	2 9 36.20	+ 13.37	. . .	.78			
	24	γ Ceti	18.8	31.4	44.1	56.8	9.2	21.1	34.0	2 35 56.49	+ 0.89	. . .	.81	2 35 26.57	5.37	
	25	α Ceti	..	..	..	..	..	..	28.8	2 55 28.80	— 36.75	. . .	.82	2 54 21.23	5.33	
	26	η Tauri	18.2	32.3	45.9	59.7	13.1	26.2	40.1	3 38 59.36	+ 0.31	. . .	.85	3 38 28.82	5.75	
	27	γ^1 Eridani	48.2	1.0	14.2	27.1	40.1	52.4	5.5	3 51 26.93	1.33	. . .	.86	3 50 57.40	4.54	
	28	α Tauri	4.4	17.9	31.1	44.1	57.2	9.6	22.9	4 27 43.89	+ 0 0.51	. . .	— 30.89	4 27 13.51	+0 5.48	

DATE.	CLOCK. At 1h.	Hourly Rate.	VALUE OF m.	n.	c.
	s.	s.	s.	s.	s.
Dec. 28	f 28.73	g .057	+0.841	—1.380	
29	f 30.73	g .057	+0.954	—1.520	

OBSERVATIONS

WITH

THE MURAL CIRCLE,

1847.

NATIONAL OBSERVATORY.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M. S.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
Jan. 5	1	Sun, S. L. (Mic.)	3	— 0 15.4	61 47 33.7	39.7	30.8	40.7	24.0	38.4	34.55d	31.196	29.894	49.0	51.0	48.0	51.5	49.5
	2	Sun, N. L.	5	+ 0 18.6	61 13 40.5	47.4	39.7	48.3	32.0	47.0	42.48	. .						
	†3			— 6 15.5	310 24 45.0	52.5	44.0	51.0	36.7	50.2	46.57	29.893						
	4			4 15.5								.885						
	5			2 15.5								.880						
	6		4	— 0 6.5								.873	29.942	50.5	46.2			49.0
	7	Polaris (Mic.)		+ 1 53.5								.873						
	8			3 53.5								.883						
	9			5 53.5								.887						
	10			7 53.5								.906						
	†11		5	+ 9 44.5								.938						
	12	α Arietis	4	. . .	16 9 10.0	16.0	8.6	14.6	4.3	13.6	11.18	. .	29.946	49.5	43.8	48.5	47.5	47.0
	13	γ Ceti	4	. . .	36 17 44.3	50.7	42.5	51.6	35.5	48.2	45.45d	. .	29.950	49.0	43.8		47.5	47.5
	†14	β Ursæ Minoris, S. P.	4	. . .	293 42 31.7	37.3	29.5	39.5	23.1	34.7	32.64d	. .	29.950	48.5	43.2			
	15	Ceres	4	. . .	24 11 43.0	49.6	41.7	50.8	34.3	47.4	44.47	. .	29.946	47.5	41.2			47.0
	16	Tauri, 1164 (Mic.)	4	. . .	,,	,,	,,	,,	,,	,,	,,	30.574						
	17	η Tauri	4	. . .	15 15 47.5	54.5	45.4	54.3	37.6	50.5	48.30	. .	29.946	47.0	41.3			
	18	ζ Ursæ Minoris, S. P.	4	. . .	297 11 10.5	17.2	7.8	18.5	4.5	13.7	12.03	. .	29.946	46.8	41.8		46.0	47.0
	†19	Jupiter, S. L.	4	. . .	17 55 29.0	35.6	28.0	38.5	21.0	32.0	30.68	. .	29.958	46.0	41.0		45.0	46.7
	20	Jupiter, N. L. (Mic.)	4	. . .		"	"	"	"	"	"	30.685						
	21	β Orionis	4	. . .	47 15 46.3	51.8	44.5	54.0	38.0	50.6	47.53	. .	29.952	45.0	40.8		44.5	46.0
	†22	β Tauri	4	. . .	10 25 14.2	22.8	13.0	25.8	9.4	18.7	17.32	. .						
	23	δ Orionis	4	. . .	39 17 65.3	72.3	62.0	72.3	59.3	69.8	66.83	. .	29.948	45.0	40.9		44.5	46.0
	24	Weisse V, 603 (Mic.)	4	. . .		"	"	"	"	"	"	30.804						
	†25	α Lyræ	4	. . .	0 14 62.0	71.0	60.0	71.4	56.8	66.8	64.67	30.134	29.990	44.2	44.8	47.3	47.5	46.5
6	†26		1	— 0 49.1	61 39 55.8	66.0	54.9	65.8	50.9	62.0	59.23	30.554	29.968	45.3	46.3	47.7	47.8	46.5
	27		2	33.1		"	"	"	"	"	"	.599						
	28	Sun, S. L. (Mic.)	3	— 0 15.2		"	"	"	"	"	"	.596						
	29		4	+ 0 0.8		"	"	"	"	"	"	.586						
	30		5†	23.8	61 6 18.1	28.2	16.9	28.9	12.1	23.9	21.35	29.679					48.6	47.4
	31	Sun, N. L. (Mic.)	6†	35.7		"	"	"	"	"	"	.656						
	†32		7	+ 50.7		"	"	"	"	"	"	.682						
	33	Weisse I, 40 (Mic.)	4	. . .	41 37 29.5	37.7	27.0	39.3	22.3	34.1	31.65d	26.698	29.878	49.7	47.5	47.8	50.5	48.9
	†34	Weisse I, 72 "	4	. . .		"	"	"	"	"	"	34.149						
	†35	Weisse I, 225 "	4	. . .		"	"	"	"	"	"	26.776			46.5			
	†36	Weisse I, 564 "	4	. . .	42 13 23.8	33.1	22.5	32.9	18.5	28.7	26.58	32.632			46.3		49.4	48.4
	†37	Weisse I, 594 "	5½	. . .		"	"	"	"	"	"	26.876			46.1			
	†38	Weisse I, 715 "	4½	. . .	42 44 58.2	66.9	56.5	65.9	53.2	61.8	60.42	29.281	29.878	48.5	45.9		50.7	48.5
	39	κ Orionis	4	. . .	48 36 26.6	35.6	25.1	37.9	21.4	32.0	29.77	. .	29.806	47.0	40.7		46.5	46.5
	40			— 0 46.6	305 30 39.4	46.4	36.7	49.6	30.9	44.1	41.18	29.780	29.784	46.5	41.1		46.0	46.0
	41			16.6								.790						
	42	δ Ursæ Minoris, S. P. (Mic.)	4	— 0 0.6								.798						
	43			+ 0 33.4								.788						
	44			+ 1 3.4								.792						
	†45	α Canis Majoris, (Mic.)	4	. . .	55 22 22.5	32.0	21.4	35.3	17.8	28.5	26.25d	29.400	29.776	46.2	40.8	48.0	44.5	44.7
	46	δ Geminorum	4	. . .	16 37 66.0	71.1	61.2	70.1	56.8	65.5	65.12	. .	29.760	45.8	37.6		47.1	45.9
	†47	a^1 Geminorum, (Mic.)	4	. . .	,,	,,	,,	,,	,,	,,	,,	29.941						
	†48	a^2 Geminorum	4	. . .	6 40 38.0	47.8	37.8	49.2	30.4	43.6	41.13	. .	29.750	45.5	38.1			
	49	α Canis Minoris	4	. . .	33 16 24.0	34.8	22.7	37.0	19.0	29.8	27.88	. .	29.744		37.5	48.0	35.0	45.2
8	†50	α Lyræ, (Mic.)	4	. . .	0 14 55.0	70.3	61.1	66.0	57.1	56.9	61.07	33.071	30.370	26.9	26.6	35.5	31.1	30.9
9	†51	Sun, N. L (Mic.)	1	— 0 48.6	60 43 38.0	52.9	43.9	48.0	36.3	39.8	43.15	30.575	30.246	28.0	28.6		31.5	31.8
	†52		2	— 0 31.6		"	"	"	"	"	"	.630						

DATE.	MICROMETER. Coincid.	Val. 1r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Jan. 5, 20h.	29.9592	62.750	Sun .	1	16 18.27
4h.	29.9580		Jupiter .	19	0 22.81
19h.	29.9942				
6,			Sun .	26	16 21.02
8, 19h.	30.0011				

Jan. 5. Error of Runs —0″.25. Temp. of circle 48°; of stone 48°
6. do. 0.36 do. 48 do. 48
9. do. 1.12 do. 32 do. 35

Jan. 5, 17h. Removed from the micrometer diaphragm an obstruction to the free motion of the wires.

Assumed Latitude 38° 53′ 39″.25 North.

No. for ref.	CORRECTIONS FOR Instrument.	CORRECTIONS FOR Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.	NADIR POINTS, READINGS. A.	B.	C.	D.	E.	F.	Means.
	′ ″	′ ″	° ′ ″	″	° ′ ″	″								
1	+1 17.66	+ 1 39.90	61 31 38.57	63.38	— 22 37 55.94		P.*	January 5,	19h.	30m.				
2	0 0.23	+ 1 37.53						179° 59′ 61″7	69″4	60″5	68″4	55″0	66″7	63″62
3	5.96	— 1 8.72	310 23 43.81					60.6	70.0	61.6	67.3	56.4	65.7	63.60
4	5.42	.72	43.27					61.8	69.7	60.3	68.5	54.2	67.2	63.62
5	5.12	.72	42.97					P. 60.7	70.4	61.3	67.0	56.5	65.7	63.60
6	5.33	.72	43.18					61.3	69.6	60.2	68.0	54.7	66.7	63.42
7	5.56	.72	43.41	63.29	+ 88 29 58.88	+36.79		60.4	70.3	61.2	67.3	56.7	65.3	63.53
8	5.56	.72	43.41											
9	6.36	.72	44.21					Means 61.08	69.90	60.85	67.75	55.58	66.22	63.560
10	6.62	1 8.72	44.47											—.184
11	+0 6.33	— 0 18.72	44.18											
12	—0 0.05	+ 0 17.06	16 9 28.19		+ 22 44 14.35	47.70		January 5,	1h.	30m.				
13	+0 0.08	+ 0 43.24	36 18 28.77		+ 2 35 13.77	+50.59		179 59 62.3	68.3	61.0	68.7	54.3	66.3	63.48
14	0.07	— 2 13.50	293 40 19.21		+ 74 46 36.67	—30.12		61.3	68.8	61.2	67.5	56.3	65.3	63.40
15	+0 0.13	+ 0 24.91	24 12 9.51		+ 14 41 33.03			61.8	68.3	61.0	68.2	54.8	66.0	63.35
16	—0 38.51	16.15	15 15 25.94		+ 23 38 16.60	+35.55		P. 61.5	69.2	61.5	68.2	56.5	65.3	63.70
17	+0 0.05	+ 0 16.16	15 16 4.51		+ 23 37 38.03	+35.76		61.7	69.0	61.0	68.2	55.6	65.8	63.55
18	0.10	— 1 54.68	297 9 17.45		+ 78 15 34.91	—23.18		60.8	69.0	61.3	67.5	56.4	65.0	63.33
19	+0 0.04	+ 0 18.57	17 55 26.48		+ 20 58 16.06			Means 61.57	68.77	61.17	68.05	55.65	65.62	63.470
20	—0 45.57	0 18.56												—.183
21	+0 0.06	1 4.08	47 16 51.68		— 8 23 9.14	+25.09								
22	—0 0.02	0 10.90	10 25 28.20		+ 28 28 14.34	16.64								
23	0.14	48.48	39 18 55.17		— 0 25 12.63	19.70		January 6,	20h.					
24	53.28	48.45	39 18 2.00		— 0 24 19.46	19.70		179 59 62.2	70.8	61.0	69.8	55.0	66.0	64.13
25	8.79	0 0.26	0 14 56.14	63.85	+ 38 38 46.96	3.08	C.†	61.8	70.6	60.9	69.7	55.0	65.9	63.98
26	36.25							61.9	70.8	61.6	69.1	55.2	65.4	64.00
27	39.08	1 40.52						C. 61.9	70.5	61.1	69.1	55.1	65.8	63.92
28	37.98							61.7	70.6	61.6	69.1	55.1	65.9	64.00
29	—0 37.04							61.7	70.9	61.6	69.3	56.0	65.5	64.17
30	+0 20.15		61 24 41.14		— 22 30 58.04									
31	21.67	1 38.16						Means 61.87	70.70	61.30	69.35	55.23	65.75	64.033
32	20.00													—.180
33	+3 26.94	0 51.91	41 41 50.50	62.79	— 2 48 8 46	60.24								
34	—4 20.52	51.68	41 34 2.81		— 2 40 20.77	60.13		January 6,	7h.					
35	+3 21.98	51.99	41 41 45.62		— 2 48 3.58	59.87		179 59 59.1	69.6	59.1	70.5	53.1	65.5	62.82
36	—2 45.55	52.93	42 11 33.96		— 3 17 51.92	59.13		58.7	69.9	60.0	69.2	54.9	64.8	62.92
37	+3 15.32	53.14	42 17 35.04		— 3 23 53.00	59.08		59.0	69.5	59.0	70.4	54.0	65.4	62.88
38	+0 45.02	0 54.07	42 46 39.51		— 3 52 57.47	58.82		C. 59.1	69.5	58.9	70.5	54.0	65.2	62.87
39	0.16	+ 1 6.84	48 37 36.77		— 9 43 54.73	17.09		59.1	69.9	59.1	70.9	54.0	65.8	63.13
40	13.40	— 1 22.36	305 29 32.22					59.1	69.9	59.4	70.9	54.6	65.2	63.18
41	12.84	.36	31.66											
42	12.34	.36	31.16		+ 86 35 49.59	+ 0.07		Means 59.02	69.72	59.25	70.40	54.10	65.32	62.967
43	12.94	.36	31.76											—.180
44	12.60	— 1 22.36	31.42											
45	+0 37.52	+ 1 25.17	55 24 28.94		— 16 30 46.90	— 1.64		January 9,	20h.					
46	—0 0.04	0 17.71	16 38 22.79		+ 22 15 19.25	6.39		179 59 58.0	72.8	64.2	68.0	58.0	59.2	63.37
47	+0 3.38	6.93	6 40 51.44		+ 32 12 50.60	9.40		58.0	73.7	64.9	68.0	59.0	58.9	63.75
48	0.07	6.93	6 40 48.13		+ 32 12 53.91	9.40		58.0	73.1	64.6	68.0	58.3	59.4	63.57
49	+0 0.19	38.87	33 17 6.94		+ 5 36 35.10	—14.40		C. 58.0	73.7	64.9	67.5	59.1	58.7	63.65
50	—0 4.48	+ 0 0.26	0 14 56.85	63.45	+ 38 38 45.85	+ 4.04		58.2	73.1	64.5	68.3	58.6	59.1	63.63
51	37.53							58.0	73.2	64.9	68.1	58.9	59.3	63.73
52	—0 40.44							Means 58.03	73.27	64.67	67.98	58.65	59.10	63.617
														—.172

THERMOMETERS.

NADIR POINTS.	Stone.	Upper.	Lower.
	°	°	°
Jan. 5, No. 1	48.0	53.0	49.5
" 2	48.5	50.0	49.0
6, " 1	47.5	50.0	47.3
		50.7	47.7
" 2	48.0	45.0	45.0
		47.0	46.4
9, " 1	35.2	32.5	32.6
		34.0	33.0

	H. M. S.	
34. App. R	1 5 34	(8.9 mag.)
35. "	1 14 2	(8.9 ")
36. "	1 31 53	(8 ")
37. "	1 33 2	(7 ")
38. "	1 39 19	(7 ")

*Lieut. T. J. Page.
†Prof. Coffin.

14. Large, diffused.
19. Sidereal time of S. diam. passing, 3s.02, (6 wires.)
3 to 11, 22. —0″.04 applied for error of divisions.
25, 50. —0″.11 " " "
26 to 32, 51, 52. Very unsteady.
25, 36, 45, 50. Seven observations with micrometer reduced to the meridian.
34. Three observations with mic. reduced to the meridian.
35. Five " " " " "
37. Four " " " " "
38. Six " " " " "
47, 48. Poorly defined.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	s M. s.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
Jan. 9	†1	Sun, N. L. (Mic.)	3	− 0 15.7		"	"	"	"	"	"	30.624						
	2		4	+ 0 0.3		"	"	"	"	"	"	.591						
	3	Sun, S. L. (Mic.)	5†	19.3	61 15 9.5	23.9	15.9	20.0	10.5	10.9	15.12	29.574					31.9	32.3
	4		6†	35.2		"	"	"	"	"	"	.570						
	†5		7	+ 0 50.2		"	"	"	"	"	"	.568			28.9			
	11 †6	Weisse I, 40 (Mic.)	4	. . .	41 37 38.1	42.9	33.7	38.5	29.8	31.5	35.75*d*	26.844	30.092	33.0	26.5	35.5	28.5	30.0
	†7	Weisse I, 72 "	4	. . .		"	"	"	"	"	"	34.276						
	†8	Weisse I, 225 "	2½	. . .		"	"	"	"	"	"	26.909			25.9			
	†9	Weisse I, 564 "	4	. . .	42 13 32.9	47.2	38.8	41.0	34.2	34.9	38.17	32.913	30.093	32.0			28.3	30.2
	†10	Weisse I, 594 "	5	. . .		"	"	"	"	"	"	27.153						
	†11	Weisse I, 715 "	4	. . .	42 44 58.0	72.8	64.5	65.7	63.1	59.6	63.95	29.433			24.5		28.2	29.2
	†12	Weisse I, 815 "	4	. . .		"	"	"	"	"	"	29.748	30.098	31.0	24.0			
	†13	Weisse I, 1069 "	4	. . .	43 49 53.7	67.8	59.1	61.0	57.0	55.0	58.93	30.276	30.098	30.5	23.7		27.5	28.8
	†14	Weisse II, 120 "	4	. . .	43 40 46.6	61.1	53.1	55.8	49.4	49.3	52.55	29.658			24.0		28.0	29.0
	†15	Weisse II, 159 "	4	. . .		"	"	"	"	"	"	29.610	30.100	30.0	23.9			
	†16	Weisse II, 443 "	4½	. . .	45 12 30.9	45.1	37.2	40.5	32.0	31.5	36.20*d*	31.171	30.102	29.5	23.2		28.0	28.8
	†17	Weisse II, 475 "	6	. . .		"	"	"	"	"	"	29.346			23.0			
	†18	Weisse III, 924 "	4½	. . .	48 50 53.1	68.5	60.2	64.3	59.3	56.9	60.38	29.855	30.124	27.8	21.3	35.0	26.5	27.8
	†19	Weisse IV, 114 "	3½	. . .	49 35 1.1	16.2	8.9	11.1	8.3	4.6	8.37	29.905	30.132	27.2	21.8		26.0	27.4
	†20	Eridani, 1303 "	5½	. . .		"	"	"	"	"	"	33.919						
	21	Jupiter, S. L.	.	. . .	17 58 23.1	38.1	30.9	33.0	24.9	23.7	28.95		30.146	27.0	21.8		26.0	27.3
	22	Jupiter, N. L. (Mic.)	.	. . .		"	"	"	"	"	"	30.693						
	†23	*α* Lyræ, (Mic.)	4	. . .	0 15 1.0	18.3	7.9	10.5	6.9	1.4	7.67	30.179	30.478	22.8	22.5	31.0	27.2	26.2
	12 †24	Sun, N. L. (Mic.)	1†	− 0 47.1	60 15 53.1	69.0	62.0	61.7	59.0	55.0	59.97	30.368	30.476	34.8	26.0		29.8	28.0
	25		2	32.1		"	"	"	"	"	"	.370						
	26		3	17.2		"	"	"	"	"	"	.369						
	27		4	− 0 0.2		"	"	"	"	"	"	.376						
	28	Sun, S. L. (Mic.)	5	+ 0 17.8	60 47 45.0	61.4	53.6	54.5	49.8	46.5	51.80*d*	29.658					29.5	28.5
	29		6	35.7		"	"	"	"	"	"	.662						
	†30		7†	+ 0 52.7		"	"	"	"	"	"	.680			26.5			
	31	ϑ^1 Ceti	4	. . .	47 50 58.1	71.7	64.5	66.3	64.2	58.9	63.95	. .	30.502	37.8	21.0	30.3	28.0	27.5
	32	*α* Arietis	4	. . .	16 9 4.8	17.5	11.8	9.0	8.2	2.3	8.93	. .	30.506	27.0	18.4			27.5
	33	*γ* Ceti	4	. . .	36 17 35.5	49.6	44.2	43.2	39.0	33.2	40.78*d*	. .	30.506	25.0	17.2	30.0	22.0	23.5
	34	*α* Ceti	4	. . .	35 23 43.4	58.8	52.2	50.3	48.8	41.7	49.20	. .	30.500	24.5	17.0		21.7	23.5
	35	*α* Persei	4	. . .	349 34 60.0	72.7	70.0	65.6	65.4	56.5	65.03	. .	30.494	23.8	16.9		21.7	23.5
	36	*η* Tauri	4	. . .	15 15 39.2	54.8	48.0	47.0	43.3	37.0	44.88	. .	30.484	22.5	14.6		21.7	23.5
	37	*γ* Eridani	4	. . .	52 49 12.7	28.5	21.7	21.0	17.2	11.3	18.73	. .	30.476	21.2	13.6		20.7	22.5
	38	Jupiter, S. L.	4	. . .	17 58 46.7	63.0	59.0	53.6	54.4	47.2	53.98	. .	30.482	19.8	13.2			20.9
	39	Jupiter, N. L. (Mic.)	4	. . .		"	"	"	"	"	"	30.680						
	13 40		1	− 0 48.9	60 7 20.0	33.0	31.3	26.0	25.5	19.6	25.91*d*	31.688			34.1		29.8	27.8
	41		2	32.9		"	"	"	"	"	"	.670						
	42	Sun, N. L. (Mic.)	3	− 0 17.0		"	"	"	"	"	"	.690						
	43		4	0.0		"	"	"	"	"	"	.709						
	44		5	+ 0 17.0	60 38 0.8	13.1	10.0	3.8	6.9	0.1	5.78	29.847				27.5	30.9	29.9
	45	Sun, S. L. (Mic.)	6	32.9		"	"	"	"	"	"	.844						
	46		7	+ 0 49.9		"	"	"	"	"	"	.845	30.332	27.5	34.4			
	14 †47			−10 9.2	310 24 39.7	55.7	48.2	42.0	48.9	40.0	45.75		29.886	38.2	43.5	32.1	40.8	35.7
	48			3 49.2								29.910						
	49			3 19.2								.922						
	50			2 49.2								.921						
	51			2 19.2								.925						
	†52	Polaris, (Mic.)		1 49.2								.918						

DATE.	MICROMETER. Coincid.	Val. 1r.
	revs.	″
Jan. 9,		62.750
11, 3h.	30.0022	
12, 20h.	30.0007	
4h.	30.0035	
13, 20h.	30.0008	
14, 2h.	30.0000	

OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
		′ ″
Sun .	1	16 20.30
Jupiter .	21	0 21.68
Sun .	24	16 19.53
Jupiter .	38	0 21.23
Sun .	40	16 19.23

Jan. 11.	Error of Runs	−0″.95.	Temp. of circle	30°;	of stone	35°
12.	do.	1.00	do.	30	do.	30
13.	do.	0.96	do.	30	do.	27
14.	do.	0.46	do.	38	do.	32

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR Instrument.	CORRECTIONS FOR Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.
′ ″	′ ″	° ′ ″	″	° ′ ″	″	
−0 39.61	+1 41.61					C.
−0 37.20						
+0 27.20		61 1 6.36	63.45	− 22 7 23.66		
27.61	1 44.01					
27.77						
+3 18.18	0 54.61	41 41 48.54	61.56	− 2 48 7.73	+60.74	
−4 27.92	54.37	41 34 2.20		− 2 40 21.39	60.62	
+3 14.00	54.68	41 41 44.43		− 2 48 3.62	60.37	
−3 2.94	55.81	42 11 31.04		− 3 17 50.23	59.64	
+2 58.86	55.96	42 17 32 99		− 3 23 52.18	59.60	
+0 35.93	56.97	42 46 36.85		− 3 52 56.04	59.36	
+0 15 95	57.02	42 46 16.92		− 3 52 36.11	58.95	
−0 17.04	59.24	43 50 41.13		− 4 57 0.32	58.13	
+0 21.83	58.92	43 42 13.30		− 4 48 32.49	57.24	
+0 24.88	0 58.93	43 42 16.36		− 4 48 35.55	57.01	
−1 13.02	1 2.20	45 12 25.38		− 6 18 44.57	55.75	
+0 41.87	1 2.29	45 14 20.36		− 6 20 39.55	55.58	
0 9.52	1 11.03	48 52 20.93		− 9 58 40.12	44.12	
+4 17.03	1 13.01	49 40 38.41		− 10 46 57.60	40.49	
−4 5.50	1 12.65	49 32 15.52		− 10 38 34.71	40.27	
0 0.33	0 19.56	17 58 26.50		+ 20 55 14.31		
43.67	19.54					
11.16	0 0.27	0 14 56.78	62.75	+ 38 38 45.22	4.87	
24.08						
23.68	1 40.95					
23.18						
−0 23.23		60 33 36.91		− 21 39 54.91		
+0 21.87						
21.68	1 43.27					
20.60						
+0 0.27	1 9.42	47 52 13.64	61.64	− 8 58 32.75	61.87	
−0 0.18	0 18.34	16 9 27.09		+ 22 44 13.80	48.16	P.
+0 0.10	46.61	36 18 27.49		+ 2 35 13.40	51.28	
−0 0.29	+0 45.11	35 24 34.02		+ 3 29 6.87	48.71	
+0 0.02	−0 11.68	349 34 53.37		+ 49 18 47.52	32.50	
+0 0.21	+0 17.41	15 16 2.50		+ 23 37 38.39	35.97	
−0 0.19	1 24.16	52 50 42.70		− 13 57 1.81	44.31	
0.32	0 20.17	17 58 52.60		+ 20 54 48.29		
42.77	20.16					
1 47.20						
1 45.50	1 38.04					
1 46.30						
−1 47.11		60 23 36.66	61.83	− 21 29 55.58		C.
+0 9.52						
9.90	+1 40.34					
9.89						
5.08	−1 9.03	310 23 41.89				
6.24	.09	42.99				
5.33	.09	42.08				
5.18	.09	41.93				
4.87	.08	41.63				
5.21	.08	41.97				

NADIR POINTS—READINGS.

	A.	B.	C.	D.	E.	F.	Means.
January 11.		3h.	30m.				
179° 59′	54″0	71″2	62″1	65′ 0	60″0	56″9	61″53
	54.8	71.1	62.1	66.0	58.9	57.5	61.73
	55.0	71.2	62.0	65.9	59.1	57.9	61.85
C.	54.6	71.5	62.0	65.9	59.1	57.8	61.82
	54.9	71.5	62.0	66.0	59.1	57.3	61.80
	54.7	71.1	61.9	65.4	59.1	57.9	61.68
Means	54.67	71.27	62.02	65.70	59.22	57.55	61.736
							−.181
January 11.		19h.					
179 59	55.8	73.9	64.8	65.0	62.0	56.5	63.00
	55.9	73.8	64.2	65.1	61.1	57.0	62.85
	56.0	73.9	64.0	65.2	61.1	57.0	62.87
C.	56.1	74.0	64.1	65.2	61.0	57.2	62.93
	55.8	73.5	63.9	65.1	61.1	57.1	62.75
	55.8	74.0	64.1	65.8	61.8	57.1	63.10
Means	55.90	73.85	64.18	65.23	61.35	56.98	62.917
							−.172
January 12.		1h.	30m.				
179 59	57.0	69.7	64.8	63.0	60.5	56.5	61.92
	56.5	70.3	65.6	62.1	61.2	55.2	61.82
	57.0	69.8	64.7	62.7	60.0	56.0	61.70
P.	56.5	70.3	65.0	62.0	61.3	55.3	61.73
	57.0	70.3	65.0	62.4	60.7	55.7	61.85
	57.0	70.3	65.0	62.4	61.0	55.7	61.90
Means	56.83	70.12	65.02	72.43	60.80	55.73	61.822
							−.180
January 13.		20h.	30m.				
179 59	57.1	70.0	65.6	61.5	62.8	55.2	62.03
	56.4	70.1	66.2	60.9	63.2	54.9	61.95
	56.5	70.2	66.4	61.0	63.1	54.9	62.02
C.	56.4	70.4	66.5	61.1	63.5	55.0	62.15
	56.1	70.1	66.2	60.7	63.3	54.4	61.80
	56.1	70.5	66.3	60.8	63.9	54.9	62.08
Means	56.43	70.22	66.20	61.00	63.30	54.88	62.005
							−.179
January 14.		2h.	30m.				
179 59	57.1	71.1	61.9	61.1	62.6	59.4	62.20
	56.1	71.1	62.1	60.3	63.1	58.6	61.88
	56.2	71.6	62.1	60.9	63.1	59.0	62.15
C.	56.5	71.7	62.1	60.6	63.1	58.9	62.15
	56.1	71.1	62.2	60.3	63.1	58.7	61.92
	55.8	71.5	62.3	60.5	63.5	58.1	61.95
	56.30	71.35	62.12	60.62	63.08	58.78	62.042
							−.182

THERMOMETERS.

NADIR POINTS.	Stone.	Upper.	Lower.
	°	°	°
Jan. 11, No. 1	35.0	27.5	28.0
		29.5	29.5
" " 2	31.2	27.5	26.5
		29.8	27.6
12, " 1	30.0	28.0	28.0
13, " 1	27.3	31.6	29.0
		31.5	29.0
14, " 1	32.3	39.5	36.3
		39.4	35.9

		H. M. S.	
6.	App. R	1 3 28	
7.	"	1 5 35	
8.	"	1 14 3	
9.	"	1 31 53	
10.	"	1 33 2	
11.	"	1 39 20	(7.8 mag.)
12.	"	1 45 3	(9 ")
13.	"	1 59 22	(8.9 ")
14.	"	2 8 16	(8.9 ")
15.	"	2 10 35	(9 ")
16.	"	2 26 32	
17.	"	2 27 58	(9)
18.	"	3 47 17	(7.8 ")

		H. M. S.	
19.	App. R	4 6 16	(7 mag.)
20.	"	4 7 10	(5.6 ")

1 to 5, 24 to 30. Very unsteady.
6, 7, 9, 10, 23. Five obs. with mic. reduced to the meridian.
8, 20. Four " " " "
11 to 15. Seven " " " "
16, 18, 19. Six " " " "
17. Two " " " "
16. Double; northern star observed.
23. −0″.11 applied for errors of division.
47 to 52. Circle remaining unmoved;
−0″.04 applied for errors of division.

DATE. 1847.	No. of ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M. S.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
Jan. 14	†1	Polaris, (Mic) . . .		— 1 19.2								29.908						
	2			0 49.2								.926						
	3		4†	— 0 19.2								.922						
	4			+ 0 10.8								.914						
	5			0 40.8								.917						
	6			1 10.8								.912						
	7			1 40.8								.911						
	8			2 10.8								.918						
	9			2 40.8								.918			43.1			
	†10		5†	9 40.8	310 24 40.0	55.9	48.0	42.6	49.1	40.0	45.93	. .	29.892	39.0	43.5		41.4	36.8
	†11	Weisse I, 727, (Mic.) .	4	. . .	42 53 29.0	43.6	34.2	34.1	34.0	29.8	34.12	30.185	29.904	39.9	41.3	32.1	40.1	36.2
	†12	Weisse I, 942, " .	4	. . .	43 0 1.9	16.6	8.2	5.9	9.1	2.7	7.40	30.525	29.902	39.8	40.6		39.8	36.4
	†13	Weisse II, 120, " .	4	. . .	43 41 33.8	48.1	39.2	38.9	37.1	34.0	38.52	30.341	29.910	40.0	41.5		40.0	
	†14	Weisse II, 159, " .	4	. . .	"	"	"	"	"	"	"	30.282						
	†15	Weisse II, 288, " .	6	. . .	44 18 41.1	56.2	46.2	45.9	47.3	42.0	46.45	29.462	29.910		39.4		39.8	36.2
	†16	Weisse II, 443, " .	4	. . .	45 7 31.5	45.5	37.7	36.5	36.4	31.1	36.45d	26.331			39.6		39.3	36.8
	†17	Weisse III, 455, " .	4	. . .	47 59 45.1	57.1	51.1	49.2	53.0	46.2	50.28	30.131	29.914	39.7	36.0		38.4	35.5
	†18	Weisse III, 746, " .	4	. . .	48 22 28.8	41.5	34.9	33.6	34.5	29.7	33.84d	30.410	29.914		35.9		38.0	35.4
	†19	Eridani, 1303, " .	4	. . .	49 30 53.6	68.5	60.9	58.1	64.0	57.0	60.35	29.883	29.914	38.9	35.3		37.5	35.0
	20	Jupiter, S. L. . . .	4	. . .	17 59 33.9	47.9	40.8	39.0	38.9	36.0	39.42	. .	29.914	38.5	35.5	32.8	37.5	35.0
	21	Jupiter, N. L. (Mic.) .		. . .	" " "	"	"	"	"	"	"	30.700						
22	22	Weisse I, 1069, . .	4	. . .	43 49 35.2	54.3	44.3	44.2	41.2	37.1	42.72	. .	30.254	27.3	23.2	30.8	27.6	27.4
	†23	Weisse II, 120, (Mic.) .	4	. . .	43 40 46.2	65.2	55.1	55.3	53.4	49.1	54.05	29.684	30.244	27.0	22.6		27.0	27.6
	†24	Weisse II, 159, " .	4	. . .		"	"	"	"	"	"	29.622						
	†25	Weisse II, 443, " .	3	. . .	45 12 25.1	44.9	35.5	46.1	31.3	26.9	34.97d	31.116			23.0		26.8	27.5
	†26	Weisse II, 475, " .	4	. . .		"	"	"	"	"	"	29.287						
	27	Weisse II, 566, " .	5	. . .		"	"	"	"	"	"	29.410	30.238	26.8	22.4			
23	28	Sun, S. L. (Mic.) . .	2	— 0 31.5	58 37 31.5	49.8	42.3	39.3	40.6	34.2	39.62d	31.148	29.930	34.0	41.5	30.0	35.5	33.0
	29	Sun, N. L.	5	+ 0 20.5	58 3 43.0	61.8	52.8	50.5	52.8	47.3	51.37	. .						
Feb. 1	30		1	— 0 48.3	55 43 52.5	70.4	60.6	60.9	61.9	56.0	60.38	30.426					42.5	41.0
	31	Sun, N. L. (Mic.) . .	2	32.3		"	"	"	"	"	"	.435						
	32		3	— 0 15.4		"	"	"	"	"	"	.462						
	33		4	+ 0 0.6		"	"	"	"	"	"	.494						
	34		5	17.6	56 15 29.1	46.4	36.9	37.0	35.1	32.8	36.22	29.590	29.878	42.0	43.9	41.0	43.6	41.6
	35	Sun, S. L. (Mic.) . .	6	37.5		"	"	"	"	"	"	.570						
	36		7	+ 0 48.5		"	"	"	"	"	"	.589						
	37	ε Canis Majoris . . .	4	. . .	67 37 25.5	45.0	34.0	35.1	32.9	29.6	33.68d	. .	30.086	39.0	31.5	41.7	39.7	36.9
	†38	Weisse VII, 283, (Mic.)	3	. . .	53 9 55.0	73.4	62.1	61.0	64.7	57.5	62.28	32.701			31.1		39.7	37.2
	†39	a^1 Geminorum, (Mic.) . .	4	. . .		,,	,,	,,	,,	,,	,,	29.970	30.086	38.2	30.8		39.5	37.4
	40	a^2 Geminorum	4	. . .	6 40 31.1	48.8	40.1	38.9	37.1	32.2	38.03	. .						
	41	α Canis Minoris . . .	4	. . .	33 16 19.0	38.6	25.9	28.0	25.7	21.5	26.45	. .			30.8			
	†42	β Geminorum	4	. . .	10 30 7.6	26.5	15.7	15.0	16.9	9.1	15.13	. .	30.092	38.0	30.9		38.4	36.9
	43			— 3 53.4	307 46 0.0	17.4	6.2	6.1	6.9	3.2	6.63	29.935	30.104	37.8	30.5	40.8	38.5	37.0
	44			3 23.4								.934						
	45			2 53.4								.937						
	46			2 23.4								.949						
	47			1 53.4								.951						
	48			1 23.4								.956						
	49			0 53.4								.941						
	50			— 0 23.4								.951						
	51			+ 0 6.6								.933						
	†52	λ Ursæ Minoris, S. P. (Mic.)	4†	0 36.6								.939						

DATE.	MICROMETER. Coincid.	Val. 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Jan. 14.	. .	62.750	Jupiter .	20	0 21.97
22, 3h.	30.0015				
23, 20h.	30.0003		Sun . .	28	16 18.70
27, 8h.	30.0025				
Feb. 1, 22h.	29.9983		Sun . .	30	16 16.82

Jan. 22. Error of runs —1″.12. Temp. of circle 28°; Temp. of stone 31°
23. do. 0.93 do. 30 do. 30
Feb. 1. do. 0.61 do. 40 do. 40

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR		Corrected Readings.	Zenith Point.	Apparent Declinations.	Reduction to	Observers.	NADIR POINTS—READINGS.						
Instrument.	Objects.		359° 59′		1850.0			A.	B.	C.	D.	E.	F.	Means.
″	′ ″	° ′ ″	″	° ′ ″	″									
0 5.76	—1 9.08	310 23 42.52	61.86	+ 88 29 59.05	+36.65	C.	January 22,		3h.					
4.57	.08	41.33					179° 59′	53″1	74″9	62″9	63″9	63″0	56″4	62″37
4.83	.08	41.59						53.2	75.1	63.9	64.0	63.9	56.3	62.73
5.34	.08	42.10						52.8	75.0	63.1	63.4	63.0	56.2	62.25
5.17	.07	41.94					C.	53.1	74.5	63.4	63.2	63.1	66.7	62.33
5.55	.07	42.31						53.0	75.0	63.8	63.9	63.5	56.7	62.65
5.70	.07	42.47						53.1	74.9	63.1	63.9	63.1	56.3	62.30
5.37	.07	42.14												
5.51	.07	42.28					Means	53.05	74.90	63.37	63.62	63.27	56.43	62.439
0 4.92	—1 9.04	41.72												—.176
0 11.63	+0 54.89	42 54 17.38		— 4 0 36.27	+59.54									
32.79	55.16	43 0 29.77		— 4 6 48.66	58.64		January 23,		20h.,	30m.				
21.00	56.44	43 42 13.96		— 4 48 32.35	57.45		179 59	55.2	72.8	64.6	60.3	64.4	55.6	62.15
0 17.36	56.49	43 42 17.65		— 4 48 36.54	57.22			53.6	72.4	64.0	58.0	64.4	53.6	61.00
0 34.21	57.94	44 20 18.60		— 5 26 37.49	56.71			54.8	72.4	64.5	60.2	64.4	55.6	61.98
3 50.46	59.70	46 12 26.61		— 6 18 45.50	56.00		P.	53.3	72.4	63.8	58.6	64.4	53.4	60.98
0 8.06	1 6.33	48 0 48.55		— 9 7 7.44	48.33			54.5	72.7	64.0	59.8	64.4	55.3	61.78
0 25.36	1 7.22	48 23 15.70		— 9 29 34.59	46.00			53.0	72.7	64.0	58.2	64.7	53.5	61.02
0 7.45	1 10.08	49 32 17.88		— 10 38 36.77	40.69									
0 0.04	0 18.85	17 59 36.26		+ 20 54 4.95			Means	54.07	72.57	64.15	59.18	64.45	54.50	61.485
43.97	18.84													—.182
0 0.07	59.63	43 50 42.28	62.26	— 4 57 0.77	58.84									
0 20.26	59.39	43 42 13.70		— 4 48 32.19	57.97									
0 24.09	59.39	43 42 17.53		— 4 48 36.02	57.75		January 27,		3h.,	30m.				
1 9.87	1 2.52	45 12 27.62		— 6 18 46.11	56.54		179 59	55.8	72.2	63.7	60.7	62.2	58.0	62.10
0 45.16	1 2.60	45 14 22.73		— 6 20 41.22	56.39			55.0	72.8	64.2	59.4	63.4	56.3	61.85
0 37.57	1 2.65	45 14 15.19		— 6 20 33.68	55.84		P.	55.5	72.5	64.0	60.7	63.2	57.4	62.22
								55.5	72.5	64.0	60.7	63.2	57.4	62.23
1 12.58	1 29.34	58 21 37.68	61.30	— 19 27 57.13		P.								
0 0.24	1 27.36					C.	Means	55.45	72.50	63.98	60.37	63.00	57.28	62.100
0 28.31														—.180
28.27	1 18.88													
29.45														
0 31.02		56 1 6.83	62.23	— 17 7 25.32			February 1,		22h.					
0 26.14							179 59	55.4	74.0	62.4	61.6	63.0	57.9	62.38
27.66	1 20.61							54.9	74.0	63.0	61.3	63.7	57.1	62.33
26.65								55.4	73.9	62.6	61.6	63.0	57.9	62.40
0 0.08	2 26.53	67 40 0.29	61.29	— 28 46 19.75	+ 4.98		C.	55.4	74.2	63.0	61.9	63.9	57.2	62.60
2 48.94	1 20.84	53 8 34.18		— 14 14 53.64	— 0.90			54.9	74.2	62.4	61.9	63.8	57.0	62.40
0 2.64	0 7.12	6 40 47.79		+ 32 12 52.75	10.93			54.9	74.3	62.9	61.2	64.0	56.9	62.37
0.10	7.12	6 40 45.25		+ 32 12 55.29	10.93									
0.26	39.89	33 17 6.60		+ 5 36 33.94	11.62		Means	55.15	74.10	62.75	61.58	63.57	57.33	62.413
0.00	11.27	10 30 26.40		+ 28 23 14.14	12.53									—.181
4.32	—1 18.44	307 44 52.51												
4.53	.44	52.72					February 1,		8h.					
4.46	.44	52.65					179 59	53.2	72.4	61.2	61.8	61.0	58.0	61.27
3.82	.44	52.01						53.1	72.9	61.6	62.1	61.6	57.6	61.48
3.78	.44	51.97						53.1	73.1	61.2	61.8	72.1	57.1	61.40
3.52	.44	51.71					C.	52.9	73.1	61.9	62.2	62.1	57.6	61.63
4.50	.44	52.69						53.2	73.2	61.9	61.9	61.9	57.1	61.53
3.91	.44	52.10						53.1	73.1	61.9	61.9	62.0	57.1	61.52
5.04	.44	53.23												
4.66	.45	52.84		+ 88 51 12.04	+25.72		Means	53.10	72.97	61.62	61.95	61.78	57.42	61.472
														—.182

THERMOMETERS.

IR POINTS.		Stone.	Upper	Lower.
		°	°	°
22,	No. 1	30.7	27.0	26.9
			28.2	27.1
23,	" 1	30.0	38.0	32.5
27,	" 1	40.0	40.0	38.0
1,	" 1	41.0	45.0	41.7
			46.0	41.9
	" 2	40.8	38.5	37.0
			39.7	37.7

		H. M. S.	
11.	App. Æ	1 39 55	(9 mag.)
12.	"	1 52 34	(7.8 ")
13, 23.	"	2 8 16	(8.9 ")
14, 24.	"	2 10 36	(8 ")
15.	"	2 17 —	(9 ")
16, 25.	"	2 26 32	
17.	"	3 25 2	(8 ")
18.	"	3 38 37	(7 ")
19.	"	4 7 10	(5 ")
22.	"	1 59 23	
26.	"	2 27 58	(7.8 ")
27.	"	2 32 33	
38.	"	7 9 8	(6 ")

1 to 10. —0″.04 applied for errors of division.
11. Five obs. with mic. reduced to the meridian.
12, 13, 14, 16, 19, 24. Seven " " " "
15. Two " " " "
17, 23, 38. Four " " " "
18, 25, 26. Six " " " "
15. Very faint.
16. 25. Double; northern star observed.
38. Another star (7.8 mag.) precedes 20s; 30″ N.
39 to 42. Very unsteady.
52, 15s after passing IV.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M. s.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
Feb. 1	1	λ Ursæ Minoris, S. P. (Mic.)		+ 1 6.6								29.942						
	2			1 36.6								.941						
	3			2 6.6								.930						
	4			2 36.6								.941						
	5			3 6.6								.934						
	6			3 36.6								.939						
	7			4 6.6								.920						
	8			+ 4 36.6								.929	30.102	37.5	30.4		38.5	37.0
	†9	ε Hydræ	4		31 54 35.5	53.5	42.1	43.8	40.6	38.3	42.30	. .	30.104	37.2	30.1		38.3	37.3
	†10	ϑ Ursæ Majoris, (Mic.)	4		346 32 24.2	42.3	33.4	31.9	29.6	27.6	31.50d	30.617	30.112	36.5	29.8		37.5	37.0
	11	ε Leonis	4		14 25 0.0	20.1	8.0	7.8	8.2	3.0	7.85	. .	30.116	36.5	29.6		37.8	37.0
	†12	α Leonis	4		26 10 30.7	51.4	38.8	41.1	36.1	33.9	38.67	. .	30.128	36.0	29.2		37.7	37.0
	13	Moon, S. L. (Mic.)	1†	— 0 44.1	32 59 54.1	74.8	61.2	63.7	64.4	57.5	62.62	30.158	30.136	36.0	29.2	41.5	38.2	37.0
	14		2†	29.6		"	"	"	"	"	"	.148						
	15		3†	— 0 15.1		"	"	"	"	"	"	.146						
	16		4	+ 0 0.5		"	"	"	"	"	"	.072						
	17		5	16.9		"	"	"	"	"	"	.049						
	18		6	30.5		"	"	"	"	"	"	.028						
	19		7	+ 0 46.9		"	"	"	"	"	"	29.984						
5	20	Sun, S. L.	4		55 5 22.4	38.4	30.5	32.2	27.7	23.8	29.17	. .	29.940	36.0	38.0	41.5	40.5	41.5
	†21	Venus, S. L.	4		52 11 43.0	61.0	52.0	52.0	50.0	47.0	50.83	. .	29.922	38.0	35.5		40.5	40.0
	†22	Venus, N. L. (Mic.)	4			"	"	"	"	"	"	30.197						
	23		7	— 9 46.1	307 25 1.7	18.6	9.2	8.0	8.8	3.5	8.30	30.113	29.890	31.8	28.3			
	24			7 46.1								.136						
	25			5 46.1								.163						
	26			3 46.1								.180						
	27			— 1 46.1								.190						
	28	Polaris, S. P. (Mic.)	4	+ 0 5.9								.201						
	29			2 5.9								.197						
	30			4 5.9								.177						
	31			6 5.9								.163						
	32			8 5.9								.134						
	33		1	+ 9 53.9								.108	29.896	32.0	28.0			34.0
	34	Moon, S. L. (Mic.)	4	— 0 2.2	48 28 32.6	50.7	40.0	42.8	37.3	34.6	39.67	. .	29.896	32.0	28.0		32.0	33.5
	35		6	+ 0 31.6		"	"	"	"	"	"	29.910						
6	36		1	— 0 47.7	54 47 25.1	44.0	32.2	34.1	31.4	27.6	32.40d	30.286	29.950	39.5	43.2	38.8	40.6	38.8
	37	Sun, S. L. (Mic.)	2	30.7		"	"	"	"	"	"	.319						
	38		3	14.8		"	"	"	"	"	"	.350						
	39		4	+ 0 0.2		"	"	"	"	"	"	.347						
	40		5	22.2	54 14 13.4	32.9	19.4	22.1	19.7	16.0	20.58	29.720					41.4	38.5
	41	Sun, N. L. (Mic.)	6	34.1		"	"	"	"	"	"	.742						
	42		7	+ 0 49.1		"	"	"	"	"	"	.712			43.5			
	†43	Venus, S. L.	4		51 45 23.1	42.8	30.8	30.2	29.5	27.5	30.65	. .	29.940	40.5	41.2	38.8	43.2	40.5
	44	Venus, N. L. (Mic.)	4			"	"	"	"	"	"	30.180						
	45	α Persei	4		349 34 54.0	70.7	62.9	60.9	62.7	56.8	61.33	. .	29.972	40.5	38.1	39.5	39.7	39.0
	†46	Weisse III, 455 (Mic.)	4		47 59 49.5	65.0	55.7	55.7	58.4	52.2	56.08	30.215	29.972	40.2	37.5		39.5	39.1
	†47	Anonymous "	4			"	"	"	"	"	"	28.791						
12	†48		1†	— 0 40.5	52 19 37.5	57.6	47.1	47.0	44.1	41.0	45.72	30.342	29.924	36.0	37.8	39.0	38.5	37.5
	49	Sun, N. L. (Mic.)	2†	27.5		"	"	"	"	"	"	.349						
	50		3	— 0 14.6		"	"	"	"	"	"	.361						
	51		4	+ 0 1.4		"	"	"	"	"	"	.374						
	52	Sun, S. L. (Mic.)	5†	19.4	52 51 44.5	6.45	4.15	3.75	7.84	7.45	25.79	30.090						

DATE.	MICROMETER. Coincid.	Val. 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Feb. 1, 9h.	30.0106	62.750			
5, 22h.	30.0104		Venus	21	0 5.79
6, 22h.	30.0075		Sun	36	16 17.33
			Venus	43	0 5.36
12, 23h.	30.0018		Sun	48	16 13.39

Feb. 5. Error of Runs —0″.54. Temp. of circle 40°; of stone 40°
6. do. .86 do. 36 do. 39
12. do. .94 do. 35 do. 39

Feb. 10. Wires disturbed by a small particle which had become attached to them.

ASSUMED LATITUDE 38° 53′ 39″.25 NORTH.

CORRECTIONS FOR Instrument.	Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850 0	Observers.	NADIR POINTS—READINGS.	A.	B.	C.	D.	E.	F.	Means.
′ ″	′ ″	° ′ ″	″	° ′ ″	″									
+0 4.44	— 1 18.45	307 44 52.62	61.29			C.	February 5.		21*h*.	40*m*.				
4.44	.45	52.62					179° 59′	55″6	72″3	63″0	61″2	61″6	58″0	61″95
5.08	.45	53.26						54.2	73.2	63.0	60.3	62.6	56.6	61.65
4.27	.45	62.45						54.8	72.5	62.4	61.3	61.8	57.2	61.67
4.60	.45	52.78					P.	55.0	73.7	63.2	61.4	62.7	57.2	62.20
4.16	.45	52.34						55.5	73.0	63.0	61.4	62.7	57.8	62.23
5.20	.45	53.38						54.0	73.0	62.7	60.5	62.7	57.0	61.65
+0 4.45	— 1 18.45	52.62					Means	54.85	72.95	62.88	61.02	62.35	57.30	61.892
-0 0.05	+ 0 37.93	31 55 20.18		+ 6 58 20.36	—23.24									—.182
-0 37.91	— 0 14.61	346 31 38.98		+ 52 22 1.56	32.72		February 5.		12*h*.					
-0 0.02	+ 0 15.69	14 25 23.56		+ 24 28 16.98	32.91		179 59	52.2	73.0	61.7	62.5	59.4	55.6	60.73
-0 0.10	+ 0 30.03	26 11 8.80		+ 12 42 31.74	—36.64			52.5	74.3	62.7	62.7	62.2	54.8	61.53
-0 2.82	—43 19.36							52.5	73.2	62.0	62.7	61.0	55.7	61.18
4.30	.33						P.	52.5	74.2	62.2	62.2	61.5	54.8	61.23
6.26	.30							52.7	73.8	62.0	63.0	60.7	55.4	61.27
3.87	.27	32 16 38.75		+ 6 37 1.79				52.7	74.4	62.0	62.2	61.5	54.8	61.27
4.78	.23						Means	52.52	73.82	62.10	62.55	61.05	55.18	61.203
5.32	.21													—.182
-0 4.84	43 19.18													
-0 0.05	—14 56.05	54 50 33.17	61.71	— 15 56 52.21		P.	February 6.		21*h*.	45*m*.				
-0 0.23	+1 13.00	52 12 58.27		— 13 19 17.31			179 59	54.9	74.7	62.9	61.8	62.9	58.0	62.53
-0 11.35								54.6	73.9	62.3	62.3	61.9	58.0	62.17
11.26	— 1 19.27	307 23 37.77						54.0	74.2	62.7	61.7	63.1	57.5	62.20
10.88	.28	38.14					C.	54.3	74.1	62.6	61.9	63.2	57.9	62.33
11.16	.28	37.86						54.5	74.4	62.6	62.1	62.4	58.0	62.33
11.23	.29	37.78						54.3	74.0	62.5	61.8	62.9	57.3	62.13
11.27	.30	37.73					Means	54.43	74.22	62.60	61.90	62.73	57.78	62.283
11.82	.30	37.18	61.02	+ 88 29 57.39	+38.28									—.181
11.79	.31	37.20					February 6.		8*h*.	30*m*.				
11.17	.32	37.81					179 59	51.1	73.3	61.3	62.0	62.0	55.1	60.80
11.36	.32	37.62						51.9	73.1	61.2	63.1	61.2	56.9	61.23
11.66	.33	37.31						51.5	73.8	61.9	62.9	62.1	55.7	61.32
-0 11.07	— 1 19.33	37.90					C.	51.9	74.0	61.4	63.0	62.1	55.7	61.35
-0 0.61	-54 25.84	47 34 15.21		— 8 40 34.94				51.0	73.8	61.0	62.3	61.9	55.2	60.87
-0 2.15								51.4	74.1	61.0	62.5	61.9	55.9	61.13
-0 18.78						C.	Means	51.47	73.68	61.30	62.63	61.87	55.75	61.117
20.22	+1 16.34													—.183
21.62							February 12.		22*h*.					
-0 21.06		54 32 10.98	62.10	— 15 38 29.63			179 59	54.5	73.2	62.1	62.2	61.1	56.8	61.65
+0 18.43								54.5	73.0	61.6	62.0	60.9	56.8	61.48
17.23	1 14.74						C.	54.9	73.3	62.0	62.5	61.0	57.0	61.78
19.35								53.9	73.2	61.9	62.0	61.1	56.1	61.37
+0 0.05	+1 10.98	51 46 36.32		— 12 52 54.97			Means	54.45	73.17	61.90	62.18	61.03	56.67	61.567
-0 10.66														—.181
0.00	— 0 10.97	349 34 51.36	60.93	+ 49 18 48.82	+31.92									
-0 12.92	+ 1 6.25	48 0 49.41		— 9 7 9.23	50.11		February 12.		8*h*.					
+1 16.28	1 6.31	48 2 18.67		— 9 8 38.49	+49.51		179 59	51.5	74.3	62.1	61.8	62.7	54.5	61.15
-0 22.68								52.1	74.2	62.3	62.4	62.1	55.3	61.40
22.59	+1 10.23							51.9	73.9	62.0	62.0	61.8	55.1	61.12
22.85							C.	51.7	74.1	62.0	62.5	62.1	55.7	61.35
23.10								51.6	73.9	61.8	62.1	61.9	55.0	61.05
4.53		53 36 46.54	61.39	— 13 43 5.90				51.8	73.8	61.9	62.1	61.9	55.0	61.08
							Means	51.77	74.03	62.02	62.15	62.08	55.10	61.192
														—.182

THERMOMETERS.

IR POINTS.	Stone.	Upper.	Lower.
	°	°	°
5, No. 1	41.5	43.0	40.0
" 2		34.5	34.0
6, " 1	38.8	42.5	39.7
		44.2	40.0
" 2	39.0	33.5	33.5
		36.5	35.0
12, " 1	39.0	40.6	38.7
" 2	39.0	35.5	36.0
		38.5	37.7

	H.	M.	S.	
46. App. Æ	3	25	1	(8 mag.)
47. "	3	28	42	(9.10 ")

9 to 12, 43, 44. Very unsteady.
10, 46. Seven obs. with mic. reduced to the meridian.
21, 22. Very unsteady and poorly defined.
47. Very faint.
48. Clouds passing.

Nadir Point. Feb. 12, No. 2. App. error of collim'n. 6″ East.

DATE. 1847.	No. for. ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M. s.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
Feb. 12	1	Sun, S. L. (Mic.)	6†	+ 0 42.3		"	"	"	"	"	"	30.100						
	2		7†	+ 0 54.3		"	"	"	"	"	"	.099			37.8			38.0
	†3	ε Orionis	4		40 11 9.0	28.0	16.3	18.9	16.7	12.0	16.82		30.114	37.0	28.1	39.5		35.0
	†4	κ Orionis	4½		48 36 21.1	40.2	28.6	30.3	28.1	23.2	28.58		30.114	36.8	28.0		33.5	34.6
	†5	Leporis, 1901 (Mic.)	4		53 4 53.0	71.7	61.1	59.2	62.4	54.7	60.35	30.412	30.116	36.5	33.0			33.5
	†6	Weisse V, 1372 "	4			"	"	"	"	"	"	31.072						
	†7	Weisse V, 1500 "	4		52 59 50.3	69.4	58.8	57.4	59.5	52.1	57.92	30.490	30.118	36.5	28.5	39.5	33.2	34.0
	†8	Weisse VII, 250 "	4		53 9 52.5	70.4	60.8	58.8	60.1	54.4	59.50	26.706	30.092	33.8	29.1		31.7	33.6
	†9	Weisse VII, 283 "	4			"	"	"	"	"	"	32.632						
	10		1†	— 0 44.7	51 50 45.1	63.9	52.2	52.7	52.2	49.5	52.58	29.828			47.0		44.2	44.1
	11		2†	27.7		"	"	"	"	"	"	.841						
15	12	Sun, S. L. (Mic.)	3†	— 0 13.8		"	"	"	"	"	"	.851						
	13		4	+ 0 2.2		"	"	"	"	"	"	.847						
	14		5†	19.2	51 18 56.0	73.3	62.6	60.9	64.0	58.7	62.58	30.437					45.7	44.9
	15	Sun, N. L. (Mic.)	6†	34.1		"	"	"	"	"	"	.449						
	16		7	+ 0 49.1		"	"	"	"	"	"	.446	29.958	44.0	47.0			
	†17		1	— 0 45.0	48 59 26.2	45.0	32.9	36.9	30.8	31.6	33.90	29.168	30.250	35.5	34.5	42.3	38.3	37.3
23	18	Sun, S. L. (Mic.)	2†	24.1		"	"	"	"	"	"	.180						
	19		3	16.1		"	"	"	"	"	"	.161						
	20		4	+ 0 0.9		"	"	"	"	"	"	.192						
	21		5	15.9	48 27 35.5	54.2	41.5	45.5	39.7	38.6	42.50d	29.763					39.4	37.5
	22	Sun, N. L. (Mic.)	6	31.9		"	"	"	"	"	"	.779						
	†23		7	+ 0 46.9		"	"	"	"	"	"	.797			34.5			
	24	Eridani, 1545	4		51 38 33.1	53.0	39.0	46.0	37.0	39.5	41.27	. .	30.292	36.5	30.0		34.5	35.5
	25	α Aurigæ	4		353 3 29.8	48.9	36.1	40.6	34.0	34.0	37.23	. .			29.7		34.2	35.2
	26	Weisse V. 449	4		52 8 40.8	60.3	47.9	52.1	46.6	46.9	49.10	. .	30.304	35.5	29.5		33.5	34.5
Mar. 2	27	Sun, S. L.	4		46 23 8.3	24.7	12.8	13.5	13.4	9.0	13.62	. .	30.198	40.3	39.2	41.0	42.0	41.0
	†28	Mercury	4		41 38 40.3	57.6	47.0	48.7	45.7	44.8	47.35	. .	30.176	41.2	39.8		44.0	41.5
5	29	Sun, S. L. (Mic.)	3	— 0 12.7	45 14 63.0	79.7	68.6	68.7	68.4	63.7	68.68	30.797	30.308	42.0	42.7	43.0		42.0
	30	Sun, N. L.	5	+ 0 15.3	44 41 47.3	64.5	52.4	54.8	52.0	49.5	53.42	. .						
	31	Mercury	4		38 57 58.0	72.0	62.0	61.8	63.8	59.6	62.87	. .	30.304	43.0	43.7		46.5	
	32	Venus, S. L.	4		38 26 37.3	53.4	43.7	45.6	42.7	41.7	44.07	. .	30.308	43.8	44.2		46.5	43.5
	†33	Venus, N. L. (Mic.)	4			"	"	"	"	"	"	30.217						
	†34		3	— 9 39.8	310 24 59.7	74.0	64.4	62.3	65.4	61.0	64.47	30.192	30.310	44.8	44.2		45.5	
	35			7 39.8								.157						
	36			5 39.8								.140						
	37			3 39.8								.125						
	38			— 1 39.8								.119						
	39	Polaris, (Mic.)	4	+ 0 5.2								.116						
	40			2 5.2								.116						
	41			4 5.2								.131						
	42			6 5.2								.147						
	43			8 5.2								.182						
	44		5†	+ 9 59.2								.204		45.0	45.0			
	†45		5	— 9 49.6	307 24 66.5	83.5	71.0	74.4	70.7	69.0	72.25	30.295	30.412	34.0	29.0			
	46			7 49.6								.326						
	47			5 49.6								.334						
	48			3 49.6								.346						
	49			1 49.6								.365						
	50	Polaris, S. P. (Mic.)	4	— 0 2.6								.365						
	51			+ 1 57.4								.355						
	52			3 57.4								.346						

DATE.	MICROMETER. Coincid.	Val. 1r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Feb. 12, 7h.	30.0106	62.750			
14, 4h.	30.0162				
15, 0h.	30.0100		Sun . .	10	16 13.63
23, 23h.	30.0162		Sun . .	17	16 14.35
Mar. 5, 0h.	30.0155		Sun . .	29	16 13.03
			Venus . .	32	0 6.29

Feb. 15. Error of Runs —0″.64. Temp. of circle 40°; of stone 40°
23. do. .98 do. 36 do. 41
Mar. 2 to 5. do. .62 do. 40 do. 40

March 5, 8h. 18m. Telescope disturbed by an accidental blow.

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR Instrument.	CORRECTIONS FOR Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.	NADIR POINTS—READINGS.	A.	B.	C.	D.	E.	F.	Means.
′ ″	′ ″	° ′ ″	″	° ′ ″	″									
−0 4.78	+1 11.69					C.	February 14,		4h.	30m.				
−0 4.22							179° 59′	55′3	72″0	63″0	59″5	61″3	56″4	61″25
+0 0.26	0 51.66	40 12 8.74	61.01	− 1 18 28.48	+22.86			55.0	72.5	63.5	58.3	63.0	55.3	61.27
+0 0.33	1 9.36	48 37 38.27		− 9 43 58.01	22.33		P.	56.0	73.0	62.8	59.6	62.3	57.0	61.78
−0 24.84	1 20.45	53 5 55.96		− 14 12 15.70	21.25			54.0	73.0	62.8	58.5	62.8	55.2	61.05
−1 6.54	1 20.41	53 5 14.22		− 14 11 33.96	20.28		Means	55.07	72.63	63.02	58.98	62.35	55.98	61.340
														−.182
−0 29.95	1 20.99	53 0 48.96		− 14 7 8.70	19.11									
+3 27.38	1 21.54	53 14 48.42		− 14 21 8.16	1.22									
−2 44.44	1 21.22	53 8 36.28		− 14 14 56.02	0.95									
							February 15,		0h.					
+0 9.66							179 59	54.8	73.7	60.3	60.2	61.8	58.9	61.62
9.54	1 7.63							54.8	73.2	60.1	60.6	61.5	59.3	61.58
9.50							C.	54.8	73.6	60.3	61.0	61.9	59.6	61.87
+0 10.30		51 35 56.33	61.54	− 12 42 15.54				55.0	73.2	60.4	61.1	61.7	59.5	61.82
−0 26.12							Means	54.85	73.43	60.27	60.73	61.72	59.33	61.722
26.43	1 6.26													−.182
−0 25.88														
+0 51.43														
51.59	1 3.18						February 23,		0h.					
53.10							179 59	52.4	74.3	61.3	63.0	60.4	57.4	61.47
51.76		48 45 14.70	61.48	− 9 51 33.97				52.6	74.8	61.1	62.8	60.4	57.7	61.57
16.47							C.	52.7	75.1	61.9	63.2	60.7	57.9	61.92
15.96	1 1.95							53.0	74.5	60.6	64.1	59.1	58.9	61.70
15.26							Means	52.67	74.68	61.22	63.28	60.15	57.97	61.665
														−.182
+0 0.25	+ 1 17.38	51 39 58.90	61.17	− 12 46 18.48	35.04									
−0 0.28	− 0 7.47	353 3 29.48		+ 45 50 10.94	11.58									
0.25	+ 1 18.90	52 10 7.75		− 13 16 27.33	29.36		February 23,		12h.					
0.15	−15 12.29	46 8 1.18	60.85	− 7 14 21.08		P.	179 59	49.6	75.2	60.8	65.1	60.4	54.5	60.93
								50.2	74.6	60.8	65.2	59.2	56.1	61.02
0.10	+ 0 48.50	41 39 35.75		− 2 45 55.65			C.	49.9	75.1	60.7	65.1	60.2	55.3	61.05
49.60	54.10	44 59 0.15	60.36	− 6 5 20.54				51.1	74.4	60.2	65.5	59.2	56.5	61.15
0.66	53.04						Means	50.20	74.83	60.63	65.22	59.75	55.60	61.038
														−.183
−0 0.05	43.52	38 58 46.34		− 0 5 6.73										
+0 0.21	43.86	38 27 21.85		+ 0 26 17.81										
−0 12.31	+ 0 43.80													
6.18	− 1 9.87	310 23 48.42												
5.77	.86	48.84					March 2,		23h.					
6.10	.85	48.52					179 59	55.0	72.2	60.3	62.2	59.3	58.3	61.22
6.13	.84	48.50						54.2	72.7	60.8	61.0	61.0	56.4	61.02
6.31	.83	48.33						55.2	72.2	60.3	61.8	59.4	58.4	61.22
6.27	.82	48.38		+ 88 29 51.25	44.15		P.	54.3	73.0	60.8	60.8	60.8	57.2	61.15
6.04	.81	48.62						54.7	72.8	60.5	60.8	60.4	57.0	61.03
6.35	.80	48.32						54.0	72.5	60.0	60.4	59.7	56.8	60.57
6.29	.78	48.40					Means	54.57	72.57	60.45	61.17	60.10	57.35	61.035
7.01	.77	47.69												−.183
6.62	1 9.76	47.99												
22.29	1 20.53	307 23 29.70												
22.42	.55	29.55					March 5,		23h.	30m.				
21.52	.57	30.43					179 59	55.4	71.4	59.7	60.3	58.8	58.0	60.60
21.57	.60	30.35						54.4	72.4	60.5	60.3	60.6	57.0	60.87
21.89	.62	30.01						55.0	71.6	59.7	60.5	59.0	57.7	60.58
21.72	.64	30.16	59.12	+ 88 29 51.66	+44.30		P.	53.8	72.2	60.0	60.0	59.8	56.6	60.40
								54.5	71.6	59.5	60.0	59.2	57.0	60.30
21.28	.66	30.58						54.0	72.2	59.8	60.0	60.0	57.0	60.50
−0 21.62	− 1 20.68	30.22					Means	54.52	71.90	59.87	60.18	59.57	57.22	60.542
														−.184

THERMOMETERS.

NADIR POINTS.	Stone.	Upper.	Lower.
	°	°	°
Feb. 14, No. 1		42.0	40.0
15, " 1		46.5	45.0
23, " 1	42.5	39.5	38.7
" 2	40.0	30.2	31.3
Mar. 2, " 1	41.0	43.0	41.0
5, " 1	42.0	46.0	42.0

		H. M. S.	
4. App.	R	5 40 34	
5.	"	5 49 28	(4 mag.)
6.	"	5 53 19	(8 ")
7.	"	5 57 56	(8 ")
8.	"	7 8 11	(7 ")
9.	"	7 10	(7.8 ")
24.	"	4 52 51	(5 ")
26.	"	5 18 38	(7 ")

3, 4, 17 to 23. Very unsteady.
5. Four obs. with mic. reduced to the meridian.
6. Two " " " "
7, 8. Seven " " " "
9. Obscured by clouds; another star (7.8 mag.) precedes 20s; 30′ N.
28. Very faint and unsteady.
33. −0″.06 applied for defective illumination.
34 to 44. −0″.04 applied for error of divisions.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No	M. S.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
March 5	1	Polaris, S. P. (Mic.)		+ 5 57.4								30.338						
	2			7 57.4								.318						
	3		3	+ 9 41.4								.295	30.408	35.0	27.5		36.0	36.0
	4	Moon, S. L.	4	+ 0 3.0	50 36 50.4	69.2	56.6	60.6	59.0	55.7	58.58	. .	30.412	34.0	26.0			33.0
6	†5		1	— 0 43.1	44 18 41.4	60.2	45.8	51.6	43.8	45.9	48.12	30.014	30.482	44.5	45.8		44.0	41.8
	6	Sun, N. L. (Mic.)	2	29.1		"	"	"	"	"	"	.079						
	7		3†	— 0 13.2		"	"	"	"	"	"	.092						
	8		4	+ 0 0.8		"	"	"	"	"	"	.064						
	9		5†	22.8	44 50 48.2	65.7	50.8	56.5	51.0	50.9	53.85	29.844				41.0	45.8	42.5
	10	Sun, S. L. (Mic.)	6	35.7		"	"	"	"	"	"	.884						
	†11		7	+ 0 47.7		"	"	"	"	"	"	.872			46.5			
	12	Mercury, S. L.	4	. . .	38 5 37.1	53.9	42.1	45.2	40.1	40.8	43.20	. .	30.442	45.2	47.4		46.9	42.8
	†13	Mercury, N. L. (Mic)	7	. . .		"	"	"	"	"	"	30.118						
	14	Venus, S. L.	4	. . .	37 55 32.8	48.2	37.1	40.8	34.4	34.9	38.03	. .	30.436	45.5	47.8		47.0	43.8
	†15	Venus, N. L. (Mic.)	4	. . .		"	"	"	"	"	"	30.199						
	†16		3	— 9 40.4	310 24 48.6	63.1	52.2	52.4	51.7	51.7	53.28	. .	30.430	46.3	48.2	41.0	47.9	44.3
	17	(Mic.)		7 14.4								29.976						
	18	"		6 54.4								.978						
	19	"		6 34.4								.969						
	20	"		6 14.4								.961						
	21	"		5 54.4								.958						
	22			— 4 24.4	52.1	68.8	55.6	56.3	56.7	54.6	57.35	. .						
	23	Polaris	4	+ 0 5.6	53.8	68.8	57.8	57.1	58.6	56.3	58.73	. .			48.2		48.2	44.5
	24			4 5.6	52.1	67.9	55.6	56.1	55.9	54.9	57.08	. .						
	25	(Mic.)		6 5.6								30.039						
	26	"		6 25.6								.039						
	27	"		6 45.6								.040						
	28	"		7 5.6								.041						
	29	"		7 26.6								.041						
	†30		5	+ 9 46.0		47.8	63.2	51.4	52.8	50.9	51.1	52.87	. .	30.420	47.0	48.3		48.2	44.7
	31	Weisse V, 449	4	. . .	52 8 44.7	61.4	47.5	54.1	48.6	51.5	51.30	. .	30.378	46.5	43.1	42.1	44.0	45.1
	32	κ Orionis	4	. . .	48 36 26.8	42.1	28.0	35.8	29.2	30.7	32.10	. .	30.380	46.1	42.2		44.9	43.9
	†33	Leporis, 1901 (Mic)	4½	. . .	53 4 46.5	62.7	49.2	54.4	51.2	51.2	52.53	30.233	30.386	46.8				
	†34	Weisse V, 1372 (Mic.)	4	. . .		"	"	"	"	"	"	30.889						
	†35	Weisse V, 1479 "	3½	. . .	52 57 20.6	36.2	22.4	29.2	22.5	24.2	25.85d	29.791			41.5		44.2	43.5
	†36	Weisse V, 1487 "	5½	. . .		"	"	"	"	"	"	32.971						
	37	Weisse V, 1500 "	6	. . .		"	"	"	"	"	"	28.040						
	38	*a* Canis Majoris	4	. . .	55 23 4.1	19.2	7.8	12.4	10.7	8.2	10.40	. .	30.374	44.8	40.1		42.5	42.5
	39	ε Canis Majoris	4	. . .	67 37 34.1	51.5	38.7	44.8	37.4	40.7	41.20d	. .	30.370	44.5	39.5		42.5	42.2
	†40	Weisse VII, 250 (Mic.)	6	. . .	53 12 30.5	46.4	32.7	39.4	31.8	34.8	35.93d	29.162						
	41	Weisse VII, 316	4	. . .	53 27 18.5	36.2	20.9	28.7	21.5	23.5	24.88d	. .	30.366	44.0	39.2		42.0	41.5
	42	a^1 Geminorum, (Mic.)	4	. . .		,,	,,	,,	,,	,,	,,	29.982						
	43	a^2 Geminorum	4	. . .	6 40 30.9	46.7	33.9	40.7	31.2	34.6	36.33	. .	30.364	43.5	39.1		42.2	42.0
	†44	*a* Canis Minoris	4	. . .	33 16 22.4	40.1	25.0	33.2	24.9	26.9	28.75	. .	30.360	43.5	39.2			42.2
8	45	μ Geminorum	4	. . .	16 18 16.3	29.0	16.3	19.0	16.5	19.2	19.38	. .	30.134	56.0	50.3	50.0	52.5	51.0
	†46	51 (Hev) Cephei	4	. . .	311 39 3.5	15.2	4.3	7.0	5.6	6.7	7.05	. .						
	†47	*a* Canis Majoris	6	. . .	55 23 7.5	20.0	7.6	13.2	9.8	12.2	11.73	. .	30.138	55.0	51.0		52.0	50.5
	48	ε Canis Majoris	4	. . .	67 37 40.4	54.2	42.7	48.4	43.0	48.0	46.12d	. .						
	49	δ Geminorum	4	. . .	16 37 56.6	68.9	57.5	60.4	58.6	59.8	60.31d	. .	30.148	54.0	50.1		51.5	50.5
	50	a^2 Geminorum	5	. . .	6 40 30.0	43.7	30.8	37.3	29.4	35.2	34.40	. .	30.160	53.5	49.8		52.5	50.5
	†51	β Geminorum	6	. . .	10 30 6.3	19.5	6.4	12.4	8.7	10.4	10.62	. .	30.162	53.5	49·5		52.0	50.5
10	52	δ Orionis	5	. . .	39 18 5.5	17.5	3.3	12.0	5.3	11.1	9.12	. .	30.082	51.5	50.0		51.3	50.0

DATE.	MICROMETER. Coincid.	Val 1 r.
	revs.	″
Mar. 6, 0h.	30.0123	62.750
10, 7h.	30.0146	

OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
		′ ″
Sun . .	5	16 9.40
Mercury	12	0 3.41
Venus .	14	0 5.83

March 6. Error of Runs —0″.47. Temp. of circle and stone 42°
March 8. do. .62 do. do. 40
March 10. do. .40 do do. 50

Assumed Latitude 38° 53′ 39″ 25 North.

No. fur ret.	CORRECTIONS FOR Instrument.	CORRECTIONS FOR Objects.	Corrected Readings.	Zenith Point. 350° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.	NADIR POINTS—READINGS.	A.	B.	C.	D.	E.	F.	Means.
	′ ″	′ ″	° ′ ″	″	° ′ ″	″									
1	−0 21.85	− 1 20.71	307 23 29.96				P.	March 5.		11h.	30m.				
2	22.03	.73	29.76					179° 59′	52″2	70″6	56″7	61″4	57″0	57″3	59″20
3	22.15	− 1 20.75	29.62						51.6	71.5	57.6	61.4	57.7	56.0	59.30
4	0.05	−55 39.72	49 41 18.81	59.12	− 10 47 40.44				51.5	70.5	56.3	61.4	55.8	56.0	58.58
5	0.05						C.	P.	51.8	71.7	58.0	61.8	58.6	56.0	59.65
6	4.10	+ 0 52.21							52.5	71.2	57.2	62.2	56.5	56.6	59.37
7	4.93								51.8	72.0	58.2	61.6	58.6	56.0	59.70
8	−0 3.28		44 35 46.64	61.12	− 5 42 6.27			Means	51.90	71.25	57.33	61.63	57.37	56.32	59.300
9	+0 10.44														−.185
10	7.85	0 53.26													
11	8.52														
12	+0 0.03	0 41.88						March 6.		23h.	30m.				
13	−0 6.53	41.61	38 6 21.70		+ 0 47 18.67			179 59	54.9	73.3	60.4	62.3	61.1	58.5	61.75
14	+0 0.02	42.96							54.6	72.3	59.6	63.0	59.2	58.3	1.17
15	−0 11.57	+ 0 42.87	37 56 15.18		+ 0 57 25.19				54.2	72.2	59.8	62.3	59.0	57.8	0.88
16	+0 4.72	− 1 9.58	310 23 48.42					C.	54.8	72.9	59.3	62.8	59.6	58.9	1.38
17	4.91	.57	48.62						54.9	73.0	59.2	63.1	59.9	58.8	1.48
18	4.55	.57	48.26						54.5	72.9	58.8	62.9	59.4	58.3	1.13
19	4.89	.57	48.60												
20	5.17	.57	48.88					Means	54.65	72.77	59.52	62.73	59.70	58.43	61.300
21	5.04	.57	48.75												−.184
22	+0 0.96	.56	48.75												
23	−0 0.04	.56	49.13												
24	+0 0.82	.56	48.34		+ 88 29 51.87	+44.45		March 6.		8h.					
25	0.22	.55	47.75					179 59	52.8	72.2	57.5	62.7	59.5	58.0	60.45
26	0.44	.55	47.97						53.0	71.6	56.9	62.9	58.1	59.0	60.25
27	0.60	.55	48.13						53.1	71.9	57.6	62.9	59.2	58.9	60.60
28	0.77	.55	48.30					C.	53.5	71.5	57.3	62.7	59.1	58.1	60.37
29	1.03	.55	48.56						53.1	71.9	57.1	62.9	58.4	58.8	60.37
30	+0 4.58	− 1 9.54	47.91						52.9	71.4	57.1	62.2	58.1	58.0	59.95
31	−0 0.01	+ 1 16.86	52 10 8.15	60.15	− 13 16 28.75	+29.74		Means	53.07	71.75	57.25	62.72	58.73	58.47	60.330
32	+0 0.08	1 7.93	48 37 40.11		− 9 44 0.71	23.66									−.185
33	−0 13.55	1 19.68	53 5 58.56		− 14 12 19.26	22.83									
34	−0 55.06	1 19.65	53 5 17.12		− 14 11 37.72	21.91									
35	+0 13.72	1 19.40	52 58 58.97		− 14 5 19.57	20.94		March 8.		7h.	40m.				
36	−3 5.22	1 19.25	52 55 39.88		− 14 2 0.48	20.84		179 59	55.3	69.8	57.4	60.8	57.4	61.6	60.38
37	+2 4.49	1 19.49	53 0 49.83		− 14 7 10.43	20.79			54.6	69.8	58.0	60.0	58.2	60.2	60.13
38	−0 0.10	1 27.02	55 24 37.32		− 16 30 57.92	8.03		P.	55.2	69.4	57.0	60.8	57.2	60.8	60.07
39	+0 0.08	2 25.47	67 40 6.75		− 28 46 27.35	10.62			54.5	69.7	58.0	60.7	58.3	60.5	60.28
40	54.15	1 20.54	53 14 50.62		− 14 21 11.22	3.62									
41	0.06	1 21.20	53 28 46.14		− 14 35 6.74	+ 3.19		Means	54.90	69.68	57.60	60.57	57.77	60.77	60.215
42	1.92	0 7.06	6 40 45.31		+ 32 12 54.09	−13.54									−.185
43	0.03	0 7.06	6 40 43.42		+ 32 12 55.98	13.54									
44	+0 0.12	0 39.55	30 17 8.42		+ 8 36 30.98	− 9.93									
45	−0 0.06	+ 0 17.11	16 18 36.43	60.03	+ 22 35 2.85	+ 5.08	P.	March 10.		6h.	40m.				
46	−0 0.05	− 1 5.65	311 38 1.35		+ 87 15 37.93	−15.85		179 59	55.7	70.6	57.3	63.2	57.3	61.0	60.85
47	+0 0.10	+ 1 24.42	55 24 36.25		− 16 30 56.97	+ 8.25			55.1	70.3	57.1	63.9	56.1	61.7	60.70
48	−0 0.50	2 21.08	67 40 6.70		− 28 46 27.42	+10.91			55.4	70.5	57.7	63.9	56.9	61.1	60.92
49	+0 0.05	0 17.49	16 38 17.85		+ 22 15 21.43	− 7.34		C.	55.9	70.3	57.3	64.2	55.9	62.2	60.97
50	0.26	6.86	6 40 41.52		+ 32 12 57.76	13.60			55.1	71.0	57.2	64.1	57.5	61.0	60.98
51	+0 0.56	10.88	10 30 22.06		+ 28 23 17.22	−14.66			55.5	69.9	56.9	64.1	55.1	62.2	60.62
52	−0 0.05	+ 0 47.79	39 18 56.86	60.66	− 0 25 16.95	+24.59	C.	Means	55.45	70.43	57.25	63.90	56.47	61.53	60.839
															−.183

THERMOMETERS.

NADIR POINTS.		Stone.	Upper.	Lower.
		°	°	°
Mar. 5,	No. 2		40.5	39.0
6,	" 1	41.0	46.0	42.6
			47.0	42.6
	" 2	42.2	43.0	42.8
			43.0	44.5
8,	" 1	50.0	53.0	50.5
10,	" 1	50.0	49.0	48.5
			50.2	48.7

		H. M. S.	
31.	App. AR	5 18 37	
32.	"	5 40 31	
33.	"	5 49 29	(4 mag.)
34.	"	5 53 19	(8 ")
35.	"	5 57 15	(9 ")
36.	"	5 57 37	(8 "
37.	"	5 57 56	(8 ")
40.	"	7 8 9	
41.	"	7 10 8	(9 ")

5 to 11. Very unsteady.
13. −0″.27 applied for defective illumination.
15. −0″.06 " " "
16 to 30. −0″.04 applied for error of divisions.
33. Mic. A recorded 56″5.
33, 35. Four obs. with mic. reduced to the meridian.
34, 40. Three " " " " "
36. Two " " " " "
35 to 44. Through haze.
46 to 51. Through clouds.
46. Faint.
Nadir Point, March 6, No. 1. App. error of collimation, 6″ E; mercury unsteady.
Nadir Point, March 10, App. error of collimation, 8″E.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means.	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M. S.	° ′ ″	″	″	″	″	″	″	Revs.	In	°	°	°	°	°
March 10.	1	Weisse V. 603 (Mic.) .	5	. . .		"	"	"	"	"	"	34.858						
	2	*a* Columbæ	4	. . .	73 0 22.8	37.4	23.2	33.5	22.1	28.9	27.98	. .	30.089		49.5		51.1	50.0
	3	*κ* Orionis	6	. . .	48 36 29.0	41.9	29.1	38.7	27.9	35.1	33.62	. .	30.084	51.5	49.0			50.0
	4	Weisse V, 1479 . .	4	. . .	52 57 38.2	50.6	38.0	46.2	34.9	43.7	41.94*d*	. .	30.094	51.2	49.2	49.8	50.4	49.7
	5	Weisse V, 1487 (Mic.)	4	. . .		"	"	"	"	"	"	33.179						
	6	Weisse V, 1500 "	5	. . .		"	"	"	"	"	"	28.231						
	7			— 1 39.3	305 29 54.4	64.3	53.2	60.7	52.0	60.0	57.43	29.408	30.092	51.0	48.2		50.2	49.7
	8			1 19.3								.400						
	9			0 59.3								.405						
	10			39.3								.401						
	11			— 0 19.3								.398						
	†12	*δ* Ursæ Minoris, S. P. (Mic.)	4†	+ 0 0.7								.399						
	13			20.7								.409						
	14			0 40.7								.407						
	15			1 0.7								.402						
	16			1 20.7								.392						
	17			+ 1 40.7								.401						
	18			— 2 26.7								29.908			48.1			
	19			2 6.7								.913						
	20			1 46.7								.915						
	21			1 26.7								.910						
	22			1 6.7								.926						
	23			0 46.7								.917						
	24	51 (Hev.) Cephei (Mic.) .		— 0 26.7								.910						
	25		4	+ 0 6.8								.908						
	26			0 53.3								.912						
	27			1 13.3								.917						
	28			1 33.3								.918						
	29			1 53.3								.915						
	30			2 13.3								.912						
	31			+ 2 33.3	311 38 56.0	68.9	57.6	63.1	56.0	62.2	60.63	.909	30.096	50.8	48.0		49.0	49.4
18	†32			— 1 14.3	305 29 60.1	71.9	60.1	65.3	60.9	61.6	63.32	29.511	30.142	46.0	47.9		48.0	44.5
	33			0 54.3								.512						
	34			34.3								.507						
	35			— 0 14.3								.507						
	36	*δ* Ursæ Minoris, S. P. (Mic.)	4†	+ 0 5.7								.508						
	37			25.7								.515						
	38			45.7								.516						
	39			1 5.7								.503						
	40			+ 1 25.7		59.4	72.1	60.1	66.1	61.5	61.8	63.50	.502					
	41			— 1 18.2								30.221						
	42			0 58.2								.208						
	43			38.2								.211						
	44			— 0 18.2								.209						
	†45	51 (Hev.) Cephei (Mic.) .		+ 0 1.8								.198						
	46			21.8								.202						
	47			41.8								.199						
	48			1 1.8								.211						
	49			1 21.8								.207						
	50			+ 1 41.8	311 39 13.4	27.5	14.7	20.1	14.1	16.0	17.63	.207	30.146	46.5	47.6	42.5	47.8	45.0
	51	*ε* Canis Majoris, . . .	4	. . .	67 37 41.2	56.0	43.4	50.7	41.4	47.2	46.65*d*		30.148	46.5	47.2		48.5	45.0
19	†52	Sun, S. L. (Mic. 2) . .	3	— 0 16.6	39 29 1.6	14.7	1.6	7.8	3.3	6.6	5.93	14.917	30.266	50.0	53.2	44.0	52.0	48.5

DATE.	MICROMETER. Coincid.	Val. 1r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Mar. 19,		62.750	Sun .	52	16 9.11

March 18. Error of Runs—0″.58. Temp. of circle and stone 50°
19. .62 40

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR		Corrected Readings.	Zenith Point.	Apparent Declinations.	Reduction to	Observers.	NADIR POINTS—READINGS.						
Instrument.	Object.		359° 59′		1850.0		A.		B.	C.	D.	E.	F.	Means.
′ ″	′ ″	° ′ ″	″	° ′ ″	″									
0 52.86	+ 0 47.77	39 18 4.03	60.66	— 0 24 24.12	+24.59	C.	March 18,		8h.	30m.				
0.03	3 9.04	73 3 37.05		— 34 9 57.14	31.44		179° 59′	55″2	76″3	56″6	63″7	56″3	60″2	60″38
0.35	1 6.34	48 37 40.31		— 9 44 0.40	23.88			55.1	70.5	56.2	63.2	56.9	59.2	60.18
0 0.09	1 17.74	52 58 59.47		— 14 5 19.56	21.19			55.1	69.3	55.5	63.2	54.9	60.4	59.73
3 18.36	1 17.27	52 55 40.85		— 14 2 0.94	21.09		C.	54.6	71.0	56.9	63.0	57.1	59.3	60.32
1 52.27	+ 1 17.53	53 0 51.74		— 14 7 11.83	21.05			55.9	70.4	56.6	64.0	55.9	61.0	60.65
								55.0	70.5	56.7	63.0	56.1	59.9	60.20
0 37.92	— 1 22.03	305 29 13.32					Means.	55.15	70.33	56.42	63.35	56.20	60.02	60.245
38.53	.03	13.93												—.185
38.31	.03	13.71												
38.63	.03	14.03												
38.86	.03	14.26												
38.80	.04	14.19		+ 86 35 33 97	+15.24									
38.17	.04	13.56												
38.25	.04	13.64												
38.50	.04	13.89												
39.02	.04	14.41												
38.35	1 22.04	13.74												
7.13	1 5.89	311 38 1.87												
6.68	.89	1.42												
6.43	.89	1.17												
6.65	.89	1.39												
5.55	.89	0.29												
5.99	.89	0.73												
6.47	.89	1.21		+ 87 15 38.71	—16.00		March 19,		0h.	30m.				
6.57	.90	1.30					179 59	57.4	70.2	56.5	62.2	54.4	61.4	60.35
6.39	.90	1.12						57.0	71.1	57.5	61.6	56.4	60.7	60.72
6.14	.90	0.87						57.2	70.4	56.6	62.2	54.6	61.7	60.45
6.16	.90	0.89					P.	56.8	71.1	57.5	62.2	56.8	61.3	60.95
6.46	.90	1.19						57.0	70.8	56.8	62.2	54.8	61.3	60.48
6.78	.90	1.51						56.0	70.8	57.2	61.7	55.5	60.5	60.28
7.13	1 5.90	1.86					Means	56.90	70.73	57.02	62.02	55.42	61.14	60.539
31.58	1 22.26	305 29 12.78												—.185
31.60	.26	12.80												
31.97	.26	13.17												
32.00	.26	13.20												
31.95	.26	13.15	60.06	+ 86 35 33.69	+15.93									
31.49	.26	12.69												
31.38	.26	12.58												
32.13	.26	13.33												
0 32.09	1 22.26	13.29												
0 12.67	1 6.08	311 37 58.88												
11.95	.08	59.60												
12.17	.08	59.38												
12.07	.08	59.48												
12.39	.08	59.16		+ 87 15 39.75	—16.72		March 19,		10h.					
11.63	.08	59.91					179 59	53.8	68.5	54.5	62.4	50.0	60.0	58.20
11.41	.08	60.14						53.3	69.5	55.3	62.2	52.6	59.2	58.68
12.11	.08	59.44						53.8	68.8	54.6	62.6	51.2	60.4	58.57
							P.	53.5	69.5	55.4	62.2	52.8	59.5	58.82
11.77	.08	59.78						53.6	68.6	54.8	63.0	50.6	60.4	58.50
0 11.68	— 1 6.08	59.87						53.4	69.5	55.3	62.4	53.2	59.0	58.80
0 0.08	+ 2 22.15	67 40 8.88		— 28 46 29.57	+11.70		Means	53.57	59.07	54.98	62.47	51.73	59.75	58.595
15 48.02	+ 0 43.08	39 29 27.91	60.35	— 0 35 48.31		P.								—.187

THERMOMETERS.

Nadir Points.	Stone.	Upper.	Lower.
	°	°	°
18, No. 1	42.5	47.2	44.8
		47.5	45.0
19, " 1	44.0	52.5	47.5
" 2	46.0	46.5	45.5

		H.	M.	S.
1.	App. R	5	24	12
3.	"	5	40	31
4.	"	5	57	16
5.	"	5	57	37
6.	"	5	57	57

12. 3s after passing IV.
31. Circle read twice.
32 to 52 Mic. coin. from determinations on March 10 and 20.
45. 2s before passing IV.
52. Reduction of mic. reading to wire 3 —0″.0170.
March 18. Nadir Point, App. error of collimation, 8″ E.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St	Up.	Lo.
			No.	M. s.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
March 19	†1	Sun, N. L. (Mic. 4)	6	+ 0 29.4	"	"	"	"	"	"	"	45.722	30.266					
	2	ε Hydræ	4	. . .	31 54 38.3	51.8	36.8	45.6	35.2	44.0	41.95	. .	30.256	49.0	42.8	46.0	47.0	46.5
	3	ι Ursæ Majoris	4	. . .	350 15 34.4	45.4	34.8	41.5	29.5	39.5	37.52	. .	30.256	48.5	43.0			
	4	α Hydræ	4	. . .	46 52 43.4	55.6	41.5	50.2	39.5	48.5	46.45d	. .	30.252	47.8	42.0			46.0
	5	ε Leonis	4	. . .	14 24 60.0	72.7	58.2	65.7	57.4	63.4	62.90	. .	30.244	47.0	41.4		45.0	45.5
	†6	α Leonis	5	. . .	26 10 35.0	49.0	35.2	43.3	30.4	38.8	38.62	. .	30.244	46.2	42.0			45.0
20	7		1	— 0 48.0	39 20 30.9	45.9	31.2	40.9	27.0	38.4	35.72	29.428	30.074	49.0	52.8	47.3	50.0	47.5
	8		2	32.0	"	"	"	"	"	"	"	.456						
	9	Sun, S. L. (Mic.)	3	16.0	"	"	"	"	"	"	"	.462						
	10		4	— 0 1.0	"	"	"	"	"	"	"	.472						
	11		5	+ 0 15.0	38 49 1.0	16.7	3.0	8.8	1.7	7.8	6.50	30.146					50.7	48.5
	12	Sun, N. L. (Mic.)	6	30.0	"	"	"	"	"	"	"	.150						
	13		7	+ 0 46.0	"	"	"	"	"	"	"	.172			51.6			
	†14	ε Hydræ	4	. . .	31 54 40.2	53.8	37.9	49.1	34.9	46.2	43.68	. .	29.798	50.3	45.9	49.3	48.7	48.3
	†15	α Hydræ (Mic.)	4	. . .	46 52 26.5	38.3	24.2	35.1	22.3	31.2	29.60d	29.688			45.7		48.5	48.0
	16	ϑ Ursæ Majoris	4	. . .	346 31 38.4	49.6	39.8	46.7	33.3	45.0	42.13	. .	29.778	49.5	46.0		48.4	48.0
	17	ε Leonis	4	. . .	14 54 59.0	73.0	58.6	66.9	56.8	63.7	63.00	. .	29.768	46.2	46.1		48.0	48.0
	†18	α Leonis	4	. . .	26 10 35.5	50.1	34.8	45.5	30.4	40.8	39.52	. .	29.760	48.8	47.0	49.4	48.6	48.0
24	19	ε Orionis	4	. . .	40 11 18.1	30.1	16.3	27.6	13.2	27.0	22.05	. .	29.980	54.5	54.5	52.2	55.3	52.5
	20	κ Orionis	4	. . .	48 36 32.0	43.5	30.1	40.9	25.7	39.1	35.22	. .	29.978	54.8	54.0		55.5	52.8
	21	η Leporis, 1901	4	. . .	53 4 40.2	51.4	38.0	47.2	32.1	47.0	42.65	. .	29.980	54.8	53.5		55.2	52.8
	22			— 1 31.0	305 30 11.2	19.0	8.8	17.5	5.9	16.6	13.17	29.683	29.986	54.5	51.6		54.7	52.8
	23			1 11.0								.683						
	24			0 51.0								.686						
	25			31.0								.691						
	†26			— 0 11.0								.678						
	27	δ Ursæ Minoris, S. P. (Mic.)	4†	+ 0 19.0								.684						
	28			39.0								.688						
	29			59.0								.698						
	30			1 19.0								.683						
	31			+ 1 39.0								.683						
	32			— 1 7.0	311 38 52.4	63.4	51.9	59.8	47.5	59.3	55.72	29.870					54.8	52.7
	33			0 47.0								.864						
	34			27.0								.865						
	35			— 0 7.0								.860						
	†36	51 (Hev.) Cephei (Mic.)	4†	+ 0 13.0								.859						
	37			33.0								.858						
	38			53.0								.864						
	39			1 13.0								.859						
	40			1 33.0								.864						
	41			+ 1 53.0		52.1	63.5	51.9	58.9	47.3	59.2	55.48	.858	29.984	54.3	51.2		54.5	52.6
	42	Moon, N. L.	4	+ 0 1.0	22 1 26.1	36.6	24.2	35.1	20.4	33.0	29.23	. .	29.990	54.0	49.1		54.4	52.8
	†43	β Geminorum	4	. . .	10 30 7.7	19.4	6.9	16.1	5.2	13.1	11.40	. .	29.988	53.8	48.4		52.5	51.5
	44	15 Argus	4	. . .	62 44 12.0	21.5	8.6	18.0	6.3	16.8	13.87	. .	29.856	59.5	56.2		59.0	57.0
25	45	Moon, N. L.	4	— 0 2.0	24 6 65.5	74.3	62.0	70.4	58.6	70.2	66.83	. .						
	46	ε Hydræ	4	. . .	31 54 44.2	54.3	41.6	50.2	37.3	50.0	46.27	. .	29.852	59.0	55.2	53.0	58.0	56.0
	47	ι Ursæ Majoris	4	. . .	350 15 35.0	43.2	34.3	40.3	26.7	40.8	36.72	. .	29.850	59.0	55.0		58.0	56.0
	48	ε Leonis	4	. . .	14 24 62.0	72.7	59.0	65.7	56.0	66.6	63.67	. .	29.834	58.0	52.8			55.5
	†49	α Leonis	4	. . .	26 10 37.5	47.8	35.3	44.2	27.5	42.6	39.15	. .	29.830	57.5	52.0		55.5	55.0
31	50			— 7 46.5	307 45 52.6	68.0	54.8	64.2	48.9	59.9	58.07	. .	30.110	42.5	35.5	50.7	42.5	42.5
	51	(Mic.)		0 58.5								30.067						
	52	λ Ursæ Min. S. P. "		33.5								.052						

DATE.	MICROMETER. Coincid.	Val. 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Mar. 20, 0h.	30.0154	62.750	Sun . .	7	16 6.12
22, 7h.	30.0137				
24, 6h.	30.0122				

March 20. Error of runs —0″.35. Temp of circle 50°; of stone 50°
24. do. 0.27 do. 53 do. 53
25. do. 0.30 do. 50 do. 50
31. do. 1.08 do. 40 do. 50

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR		Corrected Readings:	Zenith Point.	Apparent. Declinations.	Reduction to	Observers.	NADIR POINTS—READINGS.						
Instrument	Objects.		359° 59′		1850.0			A.	B.	C.	D.	E.	F.	Means.
′ ″	′ ″	° ′ ″	″	° ′ ″	″									
16 29.35	+ 0 42.22					P.	March	20.	2h.	30m.				
0 0.02	+ 0 37.12	31 55 19.05	58.41	+ 6 58 18.61	−21.61		179° 59′	52″2	71″9	56″6	62″5	53″6	61″9	60″28
0 0.05	− 0 10.24	350 15 27.33		+ 48 38 10.33	35.52			55.8	71.9	56.3	63.5	53.2	62.9	60.60
0.10	+ 1 3.70	46 53 50.25		− 8 0 12.59	25.95			55.0	71.2	55.8	63.8	52.8	62.8	60.23
0.00	0 15.37	14 25 18.27		+ 24 28 19.39	35.80		C.	55.4	71.8	56.5	63.8	53.3	62.4	60.53
0.24	29.35	26 11 8.21		+ 12 42 29.45	36.30			55.9	71.3	56.3	63.8	53.2	62.6	60.52
35.33						C.		55.6	71.4	55.9	63.8	53.4	62.5	60.43
34.15														
34.35	42.23						Means	55.48	71.58	56.23	63.53	53.25	62.52	60.433
														−.185
0 34.29		39 5 46.36	60.25	− 0 12 6.86										
0 7.59														
7.29	41.40						March	20.	8h.	0m.				
8.11							175 59	54.6	70.4	56.1	64.6	53.9	61.0	60.10
0 0.02	0 36.33	31 55 19.99	60.32	+ 6 58 19.38	21.57			55.0	70.6	55.9	65.0	54.9	61.6	60.50
0 20.61	+ 1 2.21	46 53 52.42		− 8 0 12.85	25.83			55.6	70.5	56.1	65.8	54.3	61.9	60.70
0.17	− 0 13.97	346 31 28.33		+ 52 22 11.24	42.15		C.	55.8	70.9	55.8	65.3	54.3	61.5	60.60
0.00	+ 0 15.52	14 55 18.52		+ 23 58 21.05	35.86			55.8	70.7	56.1	65.8	54.3	61.8	60.75
0.06	28.59	26 11 8.17		+ 12 42 31.40	−36.31			55.7	70.6	55.8	64.6	54.2	61.3	60.37
0.07	48.71	40 12 10.83	60.44	− 1 18 31.14	+23.99									
0 0.08	1 5.45	48 37 40.75		− 9 44 1.06	23.90		Means	55.42	70.62	55.97	65.18	54.32	61.52	60.503
0 0.01	+ 1 16.80	53 5 59.44		− 14 12 19.75	+23.16									−.185
0 20.41	− 1 21.17	305 29 12.41												
20.51	.17	12.51					March	22.	10h.	0m.				
20.40	.17	12.40					175 59	55.2	69.7	56.3	64.2	52.3	62.0	59.95
20.14	.18	12.13						54.4	70.4	56.3	63.3	53.3	60.3	59.67
20.99	.18	12.98						55.3	70.1	56.3	64.5	52.3	61.7	60.03
20.60	.19	12.58		+ 86 35 32.68	+15.93		P.	54.7	70.1	56.3	63.5	52.7	60.8	59.68
20.31	.19	12.29						54.7	69.6	56.3	64.4	52.2	61.6	59.80
19.62	.20	11.59						54.0	70.3	56.3	63.0	53.0	50.0	59.43
20.47	.20	12.44												
20.37	1 21.20	12.34					Means	54.72	70.03	56.30	63.82	52.63	61.07	59.761
8.93	1 5.20	311 37 59.33												−.185
9.25	.20	59.65												
9.15	.21	59.54					March	24.	6h.	40m.				
9.44	.21	59.83					175 59	57.5	68.9	56.7	64.8	52.4	63.7	60.67
9.51	.21	59.90						57.7	68.7	57.0	64.9	52.8	63.8	60.82
9.59	.21	59.98						56.6	68.9	56.9	64.1	53.0	63.1	60.43
9.26	.22	59.64		+ 87 15 39.88	−16.83		C.	57.5	68.6	56.0	64.9	51.2	64.9	60.52
9.65	.22	60.03						57.1	69.0	56.9	64.2	52.8	63.4	60.57
9.41	.22	59.89						57.1	69.3	56.4	65.1	52.8	63.6	60.75
9.90	1 5.22	60.28												
- 0 0.01	− 5 4.94	21 56 24.30		+ 16 57 15.39			Means	57.25	68.90	56.65	64.67	52.50	63.78	60.625
														−.185
- 0 0.03	+ 0 10.83	10 30 22.20		+ 28 23 17.49	15.49									
- 0 0.02	+ 1 50.62	62 46 4.51	59.88	− 23 52 25.38	5.17	P.	March	25.	7h.	30m.				
0.23	− 6 50.09	24 0 16.97		+ 14 53 22.16			175 59	57.6	68.3	55.4	62.6	49.7	64.7	59.72
								57.2	69.3	56.7	62.6	52.0	63.5	60.22
0.00	+ 0 35.72	31 55 21.99		+ 6 58 17.14	21.53			57.2	68.0	55.7	62.6	50.2	64.2	59.65
0.00	− 0 9.85	350 15 26.87		+ 48 38 12.24	36.29		P.	57.2	69.3	56.8	63.0	52.8	63.6	60.45
0.00	+ 0 14.81	14 25 18.48		+ 24 28 20.65	36.19			57.2	68.7	56.3	63.2	51.4	64.2	60.15
- 0 0.01	+ 0 28.35	26 11 7.51		+ 12 42 31.62	−36.39			57.2	69.2	57.0	62.3	52.7	63.3	60.28
- 0 2.11	− 1 17.63	307 44 38.33				C.								
2.97	.65	37.45					Means	57.27	68.80	56.32	62.72	51.35	63.92	60.061
2.01	.65	38.41												−.185

THERMOMETERS.

IR POINTS.	Stone.	Upper.	Lower.
	°	°	°
20, No. 1	47.5	52.5	49.5
		52.7	49.0
" 2	49.3	51.2	48.9
		51.3	48.9
22, " 1		50.5	50.0
24, " 1	52.5	54.5	52.8
		54.5	
25, " 1	53.0	59.0	56.0

		H. M. S.
20.	App. Æ	5 40 31.
21.	"	5 49 26 (4 mag.)

1. Reduction of mic. reading to wire 3, +0″.0528.
6. Faint; obscured at IV.
14, 49. Through thick haze.
15. Three obs. with mic. reduced to the meridian.
18. Faint, diffused.
22. Circle read twice.
26. 5s. before passing IV.
36. 7s. after do.
43. −0″.04 applied for errors of division.

March 20. Nadir Points. App. error of collimation, 8″ E.
24. do. do. do. 12″ E.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M s.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
March 31	1			−0 8.5								30.064						
	2	λ Ursæ Min. S. P. (Mic.)		+0 16.5								.056			35.3		41.7	42.5
	3	"		0 41.5								.061						
	4			1 21.5	307 45 50.4	64.8	51.3	62.5	44.3	59.5	55.47	. .			35.3		41.7	42.5
	5			+6 46.5	52.0	66.9	53.7	63.9	47.2	59.8	57.25	. .	30.110	41.8	35.3		41.7	42.7
	†6	ι Ursæ Majoris	4	. . .	350 15 33.4	43.9	33.6	45.9	23.6	38.8	36.53	. .	30.136	41.0	34.6	50.8	39.5	42.0
	7	α Hydræ	4	. . .	46 52 42.1	56.5	44.4	54.8	37.4	47.9	47.18d	. .	30.142	40.5	33.7		38.7	41.0
	8	ε Leonis	4	. . .	14 24 56.6	72.3	59.1	68.9	52.9	61.9	61.95	. .	30.144	40.5	33.6		38.4	41.5
	9	α Leonis	4	. . .	26 10 31.3	48.4	34.4	45.9	25.8	36.3	37.02	. .	30.152	40.0	33.3	50.5	37.3	40.5
	10	α Ursæ Majoris	4	. . .	336 19 32.5	46.1	34.7	45.1	25.8	38.2	37.07	. .	30.168	39.3	31.4		42.1	42.7
	11	δ Leonis	4	. . .	17 31 45.9	62.2	49.9	61.0	41.9	51.9	52.13	. .			31.2		38.8	41.9
	12	δ Hydræ et Crateris. . .	4	. . .	52 49 33.7	50.5	36.9	49.8	28.1	40.4	39.90	. .	30.173	39.5	31.2		39.2	40.9
	13			−1 6.0	295 42 18.0	33.6	18.8	32.0	15.6	24.5	22.08d	29.950					39.0	40.0
	14			0 46.0								.942						
	15			26.0								.954						
	16			−0 6.0								.946						
	17	γ Cephei, S. P. (Mic.) . .	4†	+0 14.0								.946						
	18			34.0								.952						
	19			54.0								.930						
	20			+1 14.0								.932	30.184	39.0	31.5			
	21	γ Ursæ Majoris	4		344 21 14.7	29.9	17.8	28.9	12.0	21.8	20.85	. .	30.190	39.0	31.9	48.7	37.5	35.5
	†22		1	−0 44.6	45 22 11.2	29.9	16.2	27.2	11.0	16.6	18.68d	29.772	30.202	37.5	30.9		37.3	36.5
	23	Moon, N. L. (Mic.) . .	2	31.0		"	"	"	"	"	"	.712						
	†24		3	−0 14.6		"	"	"	"	"	"	.676						
	25		5	+0 15.5	45 53 4.0	22.1	8.2	19.0	3.2	9.1	10.93	30.438					35.2	36.8
	26	Moon, S. L. (Mic.) . .	6	29.9		"	"	"	"	"	"	.418						
	†27		7	+0 45.6		"	"	"	"	"	"	.392						
April 1	†28	Sun, S. L (Mic. 2) . .	3	−0 15.0	34 23 60.7	75.5	62.5	70.5	57.4	64.7	65.22	15.343	30.296	43.2	43.2	46.0	46.5	45.0
	†29	Sun, N. L. (Mic. 4) . .	5	+0 17.0		"	"	"	"	"	"	46.023						
2	30	ι Ursæ Majoris	7	. . .	350 15 31.2	39.7	28.6	39.3	21.4	35.4	32.60	. .	29.850	54.7	51.0	49.0	54.0	51.5
	31	ϑ Ursæ Majoris	4	. . .	346 31 38.6	47.2	38.2	45.6	29.7	44.0	40.55	. .	29.854	54.2	50.0		52.0	51.5
	32	ε Leonis	4	. . .	14 24 60.4	71.2	58.0	65.7	54.4	63.6	62.22	. .	29.854	54.0	49.5			51.0
	33	α Leonis	4	. . .	26 10 36.5	48.2	33.7	44.4	26.8	39.6	38.20	. .	29.854	53.5	48.5		50.5	50.5
	34	α Ursæ Majoris	4	. . .	336 19 34.3	43.3	31.7	39.5	26.2	37.2	35.37	. .	29.860	52.0	47.0		49.5	50.0
	35	δ Leonis	4	. . .	17 31 49.3	60.2	48.0	57.8	41.5	52.8	51.60	. .	29.860	52.0	47.0			
†26	δ Hydræ et Crateris. . .	4	. . .	52 49 40.5	53.0	39.0	50.3	32.3	45.2	43.38	. .					48.7	49.5
	37	γ Ursæ Majoris	4	. . .	344 21 16.6	26.7	15.2	24.5	11.7	20.7	19.23	. .	29.864	50.5	45.5		48.0	48.5
	38	β Corvi	4	. . .	61 24 61.3	74.5	60.4	70.0	57.7	66.3	65.03	. .	29.878	49.6	44.4		47.5	48.0
	39	12 Canum Venaticorum . .	4	. . .	359 44 60.0	73.0	58.8	71.3	55.8	65.0	63.98	. .	29.868	49.2	44.2	50.0	47.5	47.5
	†40		5†	−9 34.7	307 24 59.8	71.0	57.6	67.5	53.2	64.7	62.30	30.313	29.868	49.2	44.2	50.0	47.5	47.5
	41			7 34.7								.350						
	42			5 34.7								.385						
	43			3 34.7								.392						
	44			1 34.7								.397						
	45	α Ursæ Minoris, S. P. (Mic.)	4	−0 17.7								.390						
	46			+1 42.3								.390						
	47			3 42.3								.370						
	48			5 42.3								.362						
	49			7 42.3								.348						
	†50		3	+9 30.3								.322	29.868	49.0	44.0			
3	51		2	−0 31.2	33 20 51.7	64.9	51.0	57.6	47.0	59.8	55.33	29.671	29.992	53.0	58.8	49.8	56.5	51.5
	52	Sun, N. L. (Mic.) . .	3	16.2		"	"	"	"	"	"	.652						

DATE.	MICROMETER. Coincid.	Val. 1r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs	″			′ ″
Mar. 31, 9h.	30.0163	62.750	Moon .	22	14 50.80
Apr. 1, 1h.	30.0190		Sun . .	28	16 4.50
3, 2h.	30.0103		Sun . .	51	16 2.09

Apr. 1. Error of Runs —0″.30. Temp. of circle 50°; of stone 50°
2. do. .10 do. 50 do. 49
3. do. .00 do. 53 do. 50

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR		Corrected Readings.	Zenith Point.	Apparent Declinations.	Reduction to	Observers.	NADIR POINTS—READINGS.						
Instrument.	Objects.		359° 59′		1850.0			A.	B.	C.	D.	E.	F.	Means.
′ ″	′ ″	° ′ ″	″	° ′ ″	″		March 31.		10h.	30m.				
0 2.76	— 1 17.65	307 44 37.66					179° 59′	53″3	71″2	57″1	68″9	49″7	60″8	60″17
2.26	.66	38.15	60.01	+ 88 50 58.66	+40.12	C.		53.3	71.5	57.2	68.5	49.7	60.7	60.15
0 2.60	.66	37.81						52.9	71.8	57.2	68.5	50.4	60.1	60.15
0 0.09	.66	37.90					C.	53.0	71.8	57.1	68.9	50.4	60.1	60.22
0 1.69	1 17.67	37.89						53.0	71.9	56.9	68.7	50.9	60.3	60.28
0 0.13	— 0 10.37	350 15 26.29		+ 48 38 12.97	—37.26			52.3	72.0	57.1	68.9	51.3	59.7	60.22
0.14	+ 1 4.56	46 53 51.88		— 8 0 12.62	25.34		Means	52.97	71.70	57.10	68.73	50.40	60.28	60.197
0.01	0 15.56	14 25 17.52		+ 24 28 21.74	36.91									—.185
0 0.14	+ 0 29.79	26 11 6.95		+ 12 42 32.31	36.83									
0 0.08	— 0 26.69	336 19 10.30		+ 62 34 28.96	53.07									
0 0.43	+ 0 19.24	17 32 11.80		+ 21 21 27.46	45.57		April 1.		1h.					
0.08	+ 1 20.20	52 51 0.18		— 13 57 20.92	—40.05		179 59	55.3	69.7	58.8	64.3	52.0	58.7	59.80
3.80	— 2 5.91	295 40 19.97						54.5	70.4	58.5	63.3	52.8	58.4	59.65
4.55	.91	20.72						55.5	70.5	58.4	64.2	52.2	58.8	59.93
3.92	.91	20.09						54.8	70.6	59.5	63.7	53.4	58.0	60.00
4.46	.91	20.63					P.	55.4	70.3	59.0	64.2	52.7	59.0	60.10
4.38	.91	20.55		+ 76 46 41.21	+59.86			55.0	71.7	59.5	63.8	53.6	58.3	60.32
3.84	.91	20.01						55.5	70.8	58.7	64.3	52.8	59.0	60.18
4.97	.91	21.14						54.7	71.3	59.0	63.3	53.4	58.2	59.98
4.48	2 5.91	20.65					Means	55.09	70.66	58.93	63.88	52.86	58.55	59.995
0.36	0 17.05	344 21 4.16		+ 54 32 35.10	—51.91									—.185
21.17														
23.23	—22 37.81	45 0 3.45		— 6 6 24.19										
0 23.33							April 2.		10h.	20m.				
0 28.85							179 59	56.2	68.2	54.5	64.6	48.8	61.6	58.98
29.57	—52 29.40	45 0 12.02		— 6 6 32.76				55.4	69.4	55.2	63.6	50.3	60.3	59.03
0 30.10								56.2	68.9	55.0	65.2	49.0	61.8	59.35
.5 21.10	+ 0 36.40	34 23 58.21	59.81	+ 4 29 40.85		P.	P.	55.5	69.4	55.4	63.6	50.5	60.3	59.12
6 47.17	+ 0 35.65							56.6	68.8	54.9	64.8	49.3	62.0	59.40
0 1.97	— 0 9.94	350 15 24.63	58.99	+ 48 38 13.61	—37.49			55.5	69.3	55.4	64.0	50.1	60.5	59.13
0.01	— 0 13.89	346 31 26.67		+ 52 22 11.56	44.45		Means	55.09	69.00	55.07	64.30	49.67	61.08	59.170
0.00	+ 0 14.92	14 25 17.14		+ 24 28 21.10	37.10									—.185
0 0.01	+ 0 28.58	26 11 6.79		+ 12 42 31.45	36.94									
0 0.01	— 0 25.58	336 19 9.76		+ 62 34 28.48	53.59									
0 0.10	+ 0 18.43	17 32 10.13		+ 21 21 28.11	45.81		April 3.		1h.	0m.				
0 0.01	+ 1 16.82	52 51 0.19		— 13 57 21.95	39.91		179 59	56.1	69.8	55.5	65.1	50.7	62.8	60.00
								56.9	69.5	55.1	66.1	50.4	63.1	60.18
0 0.07	— 0 16.39	344 21 2.89		+ 54 32 35.35	52.47			56.8	69.3	55.1	65.9	50.3	63.5	60.15
0.00	+ 1 47.34	61 26 52.37		— 22 33 14.13	45.60		C.	56.8	69.0	55.9	65.9	51.1	63.8	60.42
0 0.06	— 0 0.26	359 45 3.66		+ 39 8 34.58	—47.66			56.5	60.6	55.7	65.3	51.1	63.7	60.32
23.27	— 1 16.65	307 23 22.44						56.1	70.0	55.2	66.1	50.9	63.7	60.33
23.83	.66	21.87					Means	56.53	69.53	55.42	65.73	50.75	63.43	60.233
24.66	.67	21.07												—.185
24.16	.68	21.52												
23.93	.69	21.74												
23.39	.70	22.27		+ 88 29 43.75	+52.81		April 3.		11h.	30m.				
23.52	.71	22.13					179 59	56.9	68.6	54.7	66.4	49.2	64.5	60.05
22.82	.71	22.83						56.5	68.8	55.0	66.4	49.6	64.6	60.15
23.29	.72	22.35						56.1	68.5	54.3	66.1	49.0	64.1	59.68
23.80	.72	21.84					C.	56.6	68.9	55.1	66.0	50.1	64.0	60.12
0 23.77	— 1 16.73	21.86						56.3	68.3	54.9	65.8	49.9	63.6	59.80
0 20.23	+ 0 33.01							55.9	68.4	54.9	65.6	50.0	63.9	59.78
21.95						C.	Means	56.38	68.58	54.82	66.05	49.63	64.12	59.930
														—.185

THERMOMETERS.

R POINTS.	Stone.	Upper.	Lower.
	°	°	°
31, No. 1	50.5	39.4	41.3
		42.8	43.0
1, " 1	46.0	48.5	46.0
2, " 1	49.0	52.5	51.0
3, " 1	49.8	57.8	52.7
		58.5	52.8
" 2	52.0	53.2	52.3
		54.9	53.9

6 to 27. Very unsteady.
22 to 24. —0″.44 applied for defective illumination.
28. Reduction of mic. reading to wire 3, —0″.0170.
29. Reduction of mic. reading to wire 3, +0″.0472.
36. Atmosphere hazy.
39. —0″.06 applied for errors of division.
40 to 50. Mic. coin. from determinations on April 1 and 3.

March 31. Nadir Point, apparent error of collimation 10″ East.
April 1. Nadir Point, mercury unsteady.
3. Nadir Point, Nos. 1 and 2, apparent error of collimation 20″ East.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	m. s.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
April 3	1	Sun, N. L. (Mic.)	4	+ 0 0.8	"	"	"	"	"	"	"	29.669						
	2		5	+ 0 17.8	33 52 32.9	45.6	31.0	42.5	25.7	38.5	36.03d	.340					57.2	51.8
	3	Sun, S. L. (Mic.)	6	0 31.8	"	"	"	"	"	"	"	.328						
	4		7	+ 0 47.8	"	"	"	"	"	"	"	.329						
	5	a^1 Geminorum (Mic.)	4	. . .	,,	,,	,,	,,	,,	,,	,,	29.981	29.890	58.0	56.3		57.6	54.8
	6	a^2 Geminorum	4	. . .	6 40 33.6	42.9	29.9	41.5	24.1	38.9	35.15	. .						
	7	a Canis Minoris	4	. . .	33 16 29.2	40.4	26.5	38.6	22.1	35.6	32.07	. .			55.6			
	†8	β Geminorum	4	. . .	10 30 8.8	20.1	7.3	16.9	5.2	14.0	12.05	. .	29.892	58.0	55.2	51.0	57.4	54.4
	9	15 Argus	4	. . .	62 44 12.3	22.1	7.8	19.2	5.9	16.8	14.02	. .	29.894	57.5	53.6		56.7	54.5
	10	δ Leonis	4	. . .	17 31 50.1	61.3	49.9	58.6	53.1	56.4	53.23	. .	29.902	55.0	49.1		53.5	52.3
	11	δ Hydræ et Crateris	4	. . .	52 49 40.6	52.4	39.5	50.8	32.4	47.9	43.93	. .	29.888		49.1		53.3	52.3
	12	γ Ursæ Majoris	4	. . .	344 21 17.1	25.9	14.6	24.1	10.6	24.1	19.40	. .	29.888	54.8	48.5	52.0	53.2	55.0
7	13	Sun, S. L. (Mic.)	3	− 0 14.1	32 22 31.0	40.3	27.3	38.8	21.0	36.6	32.50	30.215	30.012	58.8	67.0	55.0	62.5	57.5
	14	Sun, N. L.	5	+ 0 17.4	31 50 11.7	21.0	9.2	18.8	4.0	16.4	13.52	. .						
	15		5	−10 2.2	307 24 64.2	69.8	61.2	67.7	52.8	68.2	63.98	30.375	30.090	55.0	49.0	57.0		
	16			8 2.2								.411						
	17			6 2.2								.425						
	18			4 2.2								.454						
	19			2 2.2								.462						
	20	Polaris, S. P. (Mic.)	4	− 0 14.2								.466						
	21			+ 1 45.8								.461						
	22			3 45.8								.451						
	23			5 45.8								.433						
	24			7 45.8								.411						
	25		3	+ 9 29.8	63.5	70.4	61.6	68.4	53.8	67.8	64.25	.376	30.080	54.2	48.2		52.5	54.0
8	26		1	− 0 43.6	31 59 24.4	33.2	21.1	30.4	14.7	28.6	25.40	29.642			71.8	56.5	64.0	59.4
	27		2	28.6	"	"	"	"	"	"	"	.641						
	28	Sun, S. L. (Mic.)	3	− 0 14.6	"	"	"	"	"	"	"	.630						
	29		4	+ 0 1.4	"	"	"	"	"	"	"	.631						
	30		5	15.4	31 27 21.7	30.0	17.9	28.0	12.7	26.7	22.84d	29.638	30.022	62.0	71.8		64.8	60.0
	31	Sun, N. L. (Mic.)	6	32.4	"	"	"	"	"	"	"	.649						
	32		7	+ 0 46.4	"	"	"	"	"	"	"	.644						
11	†33		3	− 9 27.0	310 24 64.0	70.3	63.0	18.5	53.0	67.0	64.30	30.037	29.880	62.0	65.2	56.5	62.0	61.0
	†34			7 27.0								.014						
	35			5 27.0								29.990						
	36			3 27.0								.976						
	37			− 1 27.0								.966						
	38	Polaris (Mic.)	4	+ 0 20.0								.970						
	39			2 20.0								.983						
	40			4 20.0								30.007						
	41			6 20.0								.016						
	42			8 20.0								.034						
	†43		5†	+10 25.0								.074	29.878	64.0	68.0		63.5	62.5
12	44	Sun, S. L.	4	. . .	30 30 66.0	71.2	63.0	70.7	52.6	68.7	65.37	. .	29.878	64.5	68.5	56.5	65.0	63.5
13	45	γ Ursæ Majoris	4	. . .	344 21 15.5	23.0	14.6	23.4	6.0	21.5	17.33	. .	30.156	53.5	49.7	59.8	55.5	
16	46	Sun, S. L. (Mic.)	3	− 0 18.4	29 4 57.0	71.3	57.0	69.8	51.6	63.0	61.62	30.350	30.142	53.0	47.0	55.0		55.0
	47	Sun, N. L.	6	+ 0 30.6	28 32 37.1	52.0	37.6	52.0	29.7	44.2	42.10d	. .						
20	48	a Hydræ	4	. . .	46 52 50.4	62.2	47.8	58.7	43.7	55.2	53.00d	. .	30.186	61.8	61.0	52.0	60.5	58.0
	49	ε Leonis	4	. . .	14 24 59.8	72.3	57.0	66.8	53.4	63.0	62.05	. .	30.192	61.6	60.8			58.0
	50	a Leonis	4	. . .	26 10 36.6	50.3	35.8	47.0	27.7	41.4	39.80	. .	30.186	61.3	60.0		60.0	57.5
	51	a Ursæ Majoris	4	. . .	336 19 30.3	41.6	28.7	38.4	22.4	35.6	32.83	. .	30.180	60.3	57.0		58.5	57.0
	†52	δ Leonis (Mic.)	4	. . .	17 32 30.5	42.8	28.2	40.9	22.0	34.4	33.13d	30.687	30.176	60.0	57.0			

DATE.	MICROMETER. Coincid.	Val. 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
April 7, 2h.	30.0112	62.750	Sun	13	16 3.05
8, 2h.	.0115		Sun	26	16 0.87
9, 0h.	.0120				
9, 15h.	.0127				
11, 1h.	.0140				
13, 12h.	.0156				
16, 2h.	.0245		Sun	46	15 58.86
11h.	.0275				

April 7 to 20. Error of Runs +0″.08. Temp. of circle and stone, 60°

April 13, 23h. Lowered circle end of axis about 20″, and adjusted collimation.
14. Micrometer and fixed wires connected by fibres, which had become attached to them. In removing the fibres the fixed horizontal wire became split into three parts as far as wire IV, and the position of vertical wire IV disturbed. Subsequently one portion of the fixed wire was removed.

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR Instrument.	Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.
′ ″	′ ″	° ′ ″	″	° ′ ″	″	
-0 21.44	]	33 37 51.64	60.05	+ 5 15 47.66		C.
42.93						
44.25	+ 0 33.71					
44.80						
-0 1.84	6.71	6 40 43.70	59.75	+ 32 12 55.30	—14.92	
0.00	6.71	6 40 41.86		+ 32 12 57.14	14.92	
-0 0.02	37.66	33 17 9.71		+ 5 36 29.29	9.72	
-0 0.04	10.65	10 30 22.66		+ 28 23 16.34	16.00	
-0 0.02	1 51.34	62 46 5.38		— 23 52 26.38	4.74	
0.05	0 18.38	17 32 11.66		+ 21 21 27.34	45.91	
0.00	+ 1 16.53	52 51 0.46		— 13 57 21.46	39.83	
-0 0.02	— 0 16.30	344 21 3.10		+ 54 32 35.90	—52.72	
-0 13.12	+ 0 31.17	32 6 47.50	59.83	+ 6 46 51.58		P.
-0 0.40	+ 0 30.52					
-0 27.86	— 1 16.47	307 23 19.87				
28.26	.48	19.46				
27.68	.49	20.03				
28.45	.50	19.25				
28.34	.51	19.35				
28.39	.52	19.29	59.38	+ 88 29 40.98	+54.33	
28.22	.53	19.45				
28.15	.54	19.51				
28.02	.55	19.63				
28.03	.56	19.61				
-0 27.38	— 1 16.57	20.25				
-0 21.78						C.
22.33	+ 0 30.39					
23.50						
23.99						
24.13		31 44 17.83	60.45	+ 7 9 21.87		
24.07	+ 0 29.74					
24.95						
3.15	— 1 6.03	310 23 61.42				P.
2.77	6.00	61.07				
2.99	5.95	61.33				
2.87	5.92	61.25				
2.99	5.89	61.40				
2.71	5.85	61.16	60.99	+ 88 29 39.34	+55.68	
2.17	5.81	60.66				
1.35	5.78	59.87				
1.91	5.74	60.47				
2.30	5.71	60.89				
+0 1.82	1 5.67	60.45				
-0 0.11	15 29.20	30 15 36.06		+ 8 38 4.18		
+0 0.07	— 0 16.41	344 21 0.99	60.26	+ 54 32 38.52	—55.20	C.
-0 20.98	+ 0 28.62	28 49 10.40	60.94	+ 10 4 29.79		P.
+0 1.45	0 27.98					
+0 0.05	1 1.17	46 53 54.22	59.97	— 8 0.15.00	24.92	
0.00	0 14.76	14 25 16.81		+ 24 28 22.41	38.54	
-0 0.03	+ 0 28.25	26 11 8.02		+ 12 42 31.20	37.86	
+0 0.02	— 0 25.33	336 19 7.52		+ 62 34 31.70	57.59	
-0 41.39	+ 0 18.26	17 32 10.00		+ 21 21 29.22	—47.69	

THERMOMETERS.

NADIR POINTS.	Stone.	Upper	Lower.
	°	°	°
April 7, No. 1	55.0	63.0	58.0
" 2	57.0	63.5	59.5
8, " 1	56.7	64.4	60.0
9, " 1	60.0	55.5	54.5
12, " 1	56.5	65.0	61.5
13, " 1	59.8	54.5	56.0
		54.3	55.4
16, " 1	55.0	58.5	55.0
20, " 1	52.0	60.0	57.0

8, 33 to 43. —0″.04 applied for errors of division.
33, 34. Very unsteady.
52. Mic. C recorded 38″.2.

April 7, 8, & 12. Nadir Points No. 1, mercury unsteady.
April 8 & 9, Nadir Points, app. error of coll'n 20″ East.

NADIR POINTS—READINGS.

		A.	B.	C.	D.	E.	F.	Means.
	April 7.		2h.					
179° 59′		59″7	67″0	57″2	64″0	48″6	64″5	60″17
		58.5	68.0	58.0	62.3	50.4	63.3	60.08
		59.7	67.4	57.2	64.3	49.0	64.4	60.33
	P.	58.2	67.4	57.0	63.5	49.6	63.0	59.78
		59.2	67.4	56.8	64.2	48.8	64.2	60.10
		57.8	67.7	57.5	62.8	49.7	62.3	59.63
	Means	58.85	67.48	57.28	63.52	49.35	63.62	60.017
								—.185
	April 7.		8h.,	30m.				
179 59		60.2	65.0	57.2	63.5	46.5	65.0	59.57
		59.2	65.5	58.2	61.7	48.2	63.5	59.38
		60.2	64.8	57.3	62.6	46.7	65.0	59.43
	P.	59.6	65.8	57.5	63.3	47.3	64.6	59.68
		59.2	65.7	57.5	63.3	47.6	64.3	59.60
		59.2	68.2	57.5	63.3	48.0	64.0	59.70
	Means	59.60	65.50	57.53	62.95	47.38	64.40	59.561
								—.185
	April 8.		2h.					
179 59		59.9	67.6	56.3	66.8	47.1	66.2	60.65
		58.6	68.1	57.3	65.2	48.2	64.9	60.38
	C.	58.5	68.8	57.7	65.9	48.9	64.9	60.78
		58.6	68.9	57.1	65.9	49.0	64.8	60.72
	Means	58.90	68.35	57.10	65.95	48.30	65.20	60.633
								—.185
	April 9.		14h.	20m.				
179 59		56.2	68.8	56.0	69.1	46.2	63.5	59.97
		55.5	68.5	55.9	68.2	46.2	62.7	59.50
	C.	55.7	69.1	56.0	68.9	46.1	63.4	59.87
		55.8	69.0	56.2	68.7	46.2	63.4	59.88
	Means	55.80	68.85	56.02	68.73	46.17	63.25	59.803
								—.185
	April 12.		2h.					
179 59		60.8	68.7	59.5	65.6	48.5	64.5	61.27
		60.0	68.7	59.6	65.3	50.3	63.4	61.22
		60.6	68.0	59.0	66.0	48.0	63.8	60.90
	P.	60.0	69.3	59.7	65.2	50.6	63.0	61.30
		60.6	68.3	59.0	66.0	48.5	63.6	61.00
		60.2	69.2	60.0	65.2	50.4	63.2	61.37
	Means	60.37	68.70	59.47	65.55	49.38	63.58	61.175
								—.185
	April 13.		11h.					
179 59		58.0	68.0	57.7	68.0	45.8	64.2	60.28
		57.4	68.8	58.0	68.1	47.2	63.4	60.48
		58.3	68.1	57.7	68.1	45.7	64.2	60.35
	C.	58.0	68.3	58.0	68.1	47.0	63.5	60.49
		57.9	68.2	57.2	68.3	46.0	64.2	60.30
		57.9	69.0	58.0	68.6	47.4	63.6	60.75
	Means	57.92	68.40	57.77	68.20	46.52	63.85	60.442
								—.185
	April 16.		2h.					
179 59		56.5	72.0	56.7	69.2	47.5	63.6	60.92
		55.8	72.6	57.7	68.0	50.2	62.4	61.12
	P.	57.2	72.3	57.0	69.3	48.7	63.4	61.32
		56.0	72.7	57.6	68.6	50.0	62.0	61.15
	Means	56.37	72.40	57.25	68.78	49.10	62.85	61.125
								—.187
	April 20.		10h.	20m.				
179 59		57.3	70.2	55.6	66.8	47.4	63.3	60.10
		56.2	70.2	56.0	65.4	49.7	61.7	59.87
		56.8	70.2	55.4	66.6	48.6	63.4	60.17
	P.	56.5	70.5	56.0	67.0	49.5	62.2	60.28
		56.5	70.5	55.8	67.0	49.3	62.5	60.27
		56.5	70.5	56.0	67.0	49.8	61.8	60.27
	Means	56.63	70.35	55.80	66.63	49.05	62.48	60.158
								—.185

DATE. 1847.	No. of ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M. S.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
April 20	1	δ Hydræ et Crateris	4	. . .	52 49 42.5	56.0	41.5	54.0	34.0	50.3	46.38	. .					58.0	57.0
	2	γ Ursæ Majoris	4	. . .	344 21 12.7	23.8	11.3	22.2	8.0	18.0	16.00	. .	30.166	58.8	55.5		57.0	56.0
	†3	β Corvi	4	. . .	61 24 65.0	79.2	63.3	76.0	60.7	72.0	69.37	. .	30.156	57.5			56.0	55.0
	†4		5	— 9 18.3	307 25 8.5	20.5	7.0	18.5	3.2	14.6	12.05	30.615	30.156	57.0	54.0	53.0	56.0	55.0
	5			7 18.3								.640						
	6			5 18.3								.652						
	7			3 18.3								.660						
	†8	Polaris, S. P. (Mic.)		— 1 18.3								.665						
	†9			+ 0 57.7								.664						
	10			3 37.7								.640						
	11			7 37.7								.617						
	12			8 47.7								.585						
	†13		3	+10 12.7								.575	30.156	57.0	53.8			
	21 †14		1	— 0 48.0	26 48 52.0	67.5	51.1	64.3	44.8	58.1	56.30	30.422				54.5	66.6	59.3
	15		2	34.0	"	"	"	"	"	"	"	.412						
	15	Sun, N. L. (Mic.)																
	16		3	18.1	"	"	"	"	"	"	"	.433						
	17		4	— 0 1.1	"	"	"	"	"	"	"	.438						
	18		5	+ 0 15.9	27 19 61.0	75.8	59.6	73.1	55.9	67.9	65.65	29.719					67.5	60.3
	19	Sun, S. L. (Mic.)	6	28.9	"	"	"	"	"	"	"	.725						
	†20		7	+ 0 45.9	"	"	"	"	"	"	"	.726	30.163	66.0	78.5			
	26 21	Sun, N. L. (Mic.)	3	— 0 15 7	25 9 66.3	77.8	65.0	78.0	54.0	69.3	68.40	30.935	30.014	60.0	66.8	57.0	63.0	59.5
	22	Sun, S. L.	5	+ 0 16 3	25 40 60.0	72.0	59.0	70.8	47.4	63.7	62.15	. .						
	27 †23	Mercury	4	. . .	37 8 50.4	60.3	48.3	60.2	36.7	56.2	52.02	. .	29.998	64.0	65.0		64.5	63.0
	28 24	Sun, S. L. (Mic.)	3	— 0 16.0	25 2 36.7	44.9	34.7	46.1	20.2	40.7	37.22d	29.847	29.966	66.4	67.8	64.0	67.5	64.5
	25	Sun, N. L.	5	+ 0 17.0	24 30 56.0	62.6	52.8	62.8	38.2	58.2	55.10	. .						
	26	Venus, S. L.	4	. . .	15 46 38.3	45.7	36.7	47.3	23.0	43.0	39.00	. .	30.008	68.0	66.7		68.5	66.0
	†27	Venus, N. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	30.243						
May 5	†28		3	—10 7.1	310 24 62.7	71.4	63.6	70.2	49.0	66.0	63.82	29.908	30.228	60.0	64.0	58.0		60.5
	29			8 7.1								.877						
	30			6 7.1								.853						
	31			4 7.1								.837						
	32			2 7.1								.832						
	33	Polaris, (Mic.)	4	— 0 1.1								.825						
	34			+ 1 58.9								.834						
	35			3 58.9								.852						
	36			5 58.9								.864						
	37			7 58.9								.895						
	†38		5	+ 9 22.9								.911	30.226	61.6	64.8		64.0	63.0
6	39	Sun, S. L. (Mic.)	3	— 0 16.0	22 39 65.2	75.3	63.3	76.0	53.3	69.2	67.05	30.587	30.186	62.6	68.4	58.0	65.0	61.0
	40	Sun, N. L.	5	+ 0 15.0	22 7 39.6	50.6	38.9	52.4	25.2	46.0	42.12d	. .						
	41	Venus, S. L.	4	. . .	17 19 67.2	77.2	66.0	77.3	54.6	71.4	68.95	. .	30.128	65.0	70.8		67.0	63.0
	†42	Venus, N. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	30.260						
16	†43			— 8 20.8	310 24 62.0	71.0	62.4	71.7	46.0	66.8	63.32	29.843	29.996	59.0	59.5	62.5		
	†44			6 20.8								.807						
	45			4 29.8								.794						
	46			2 20.8								.782						
	47			+ 0 1.2								.775						
	48	Polaris, (Mic.)	4	2 1.2								.781						
	49			4 1.2								.800						
	50			6 1.2								.815						
	51			8 1.2								.833						
	†52		5	+ 9 24.2								.850	29.994	59.8	60.0		61.0	59.0

DATE.	MICROMETER. Coincid.	Val. 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
April 21, 3h.	30.0247	62.750	Sun . .	14	15 57.92
26, 3h.	.0290		Sun . .	21	15 55.62
28, 3h.	.0272		Sun . .	24	15 56.71
			Venus .	26	0 6.74
May 5, 1h.	.0260				
6,			Sun . .	39	15 54.70
			Venus .	41	0 7.29
16, 1h.	.0275				

April 21. Error of Runs +0″.70. Temp. of circle 65°; of stone 55°
26 to May 6. do. .12 do. 60 do. 60
May 16. do. .34 do. 62 do. 62

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR Instrument.	CORRECTIONS FOR Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.	NADIR POINTS—READINGS.	A.	B.	C.	D.	E.	F.	Means.
′ ″	′ ″	° ′ ″	″	° ′ ″	″									
+0 0.01	+1 16.05	52 51 2.44	59.97	— 13 57 23.22	—38.71	P.	April 21.		2h.	30m.				
−0 0.04	−0 16.23	344 20 59.73		+ 54 32 39.51	56.84		179° 59′	60″1	70″9	57″0	69″8	50″1	66″4	62″38
0.00	+1 46.22	61 26 55.59		— 22 33 16.35	—43 42			59.9	71.9	57.6	69.0	51.9	65.9	62.70
								59.9	71.2	57.2	69.1	51.3	66.7	62.57
41.29	−1 15.81	307 23 14.95					C.	59.0	72.0	57.9	68.8	52.7	65.0	62.57
41.15	.81	15.09						59.4	71.1	56.6	69.8	50.8	66.0	62.28
40.61	.82	15.62						58.4	72.1	56.8	68.7	52.9	64.9	62.30
40.25	.82	15.98					Means	59.45	71.53	57.18	69.20	51.62	65.82	62.467
40.09	.83	16.13												—.188
39.98	.83	16.24		+ 88 29 36.90	+38.28									
39.09	.83	17.13					April 26.		3h.					
39.96	.83	16.26					179 59	60.3	69.8	59.8	70.3	46.0	65.0	61.87
38.92	.84	17.29						59.4	70.3	60.3	68.8	47.8	63.3	61.65
39.67	−1 15.84	16.54						61.0	70.0	59.8	70.5	46.2	65.3	62.13
26.26						C.	P.	60.0	70.2	59.3	69.8	47.0	64.3	61.77
25.17	+0 24 19							60.3	70.2	60.0	69.5	46.2	64.0	61.70
25.96								59.3	70.0	60.0	69.5	46.2	63.6	61.43
−0 25.64		27 4 52.65	62.28	+ 11 48 48.88			Means	60.05	70.08	59.87	69.74	46.57	64.25	61.760
−0 19.83	24.76													—.187
20.11							April 28.		3h.					
−0 20.83							179 59	62.0	69.3	59.4	69.0	45.0	67.3	62.00
−0 56.49	22.89	25 25 30.42	61.57	+ 13 28 10.40		P.		60.4	69.8	60.2	68.0	46.8	65.2	61.73
−0 0.42	23.46							61.2	69.8	60.2	69.2	46.3	66.4	62.18
0.06	36.65	37 9 28.73	61.70	+ 1 44 12.22			P.	60.2	69.4	59.8	68.2	45.6	65.5	61.45
−0 10 72	22.67	24 47 13.90		+ 14 6 27.05				60.8	69.8	60.0	68.8	46.8	66.0	42.03
−0 0.03	22.12							60.5	70.0	60.0	68.8	46.7	65.6	61.93
0.11	14.16	15 46 46.31		+ 23 6 54.64			Means	60.85	69.68	59.94	68.67	46.20	66.00	61.890
−0 13.51	+0 14.08													—.187
−0 12.60	−1 6.95	310 24 9.47					May 4,		11h.					
12.67	.94	9.55					179 59	61.4	70.1	59.3	70.6	44.8	64.7	61.82
12.70	.93	9.59						59.8	70.1	60.0	70.3	45.4	63.6	61.53
12.65	.91	9.56						60.8	70.1	59.6	70.8	44.7	64.5	61.75
12.31	.90	9.23					P.	60.0	70.8	60.3	70.5	45.5	63.6	61.78
12.52	.89	9.45	61.55	+ 88 29 31.67	+62.57			60.5	70.4	59.5	71.0	44.5	64.7	61.77
								59.7	70.8	60.0	71.0	46.0	64.0	61.92
12.15	.88	9.09					Means	60.37	70.38	59.78	70.70	45.15	64.18	61.761
11.64	.87	8.59												—.186
11.92	.86	8.88					May 6,		4h.					
11.43	.85	8.40					179 59	60.8	68.5	59.8	69.4	43.8	65.4	61.28
−0 11.67	−1 6.84	8.65						60.2	70.1	60.5	69.0	46.0	64.4	61.70
−0 35.63	+0 20.36	22 23 57.09		+ 16 29 43.71				61.1	69.5	60.0	70.0	45.0	65.3	61.82
−0 0.45	19.82						P.	60.3	70.2	60.4	69.7	46.0	64.6	61.87
−0 0.01	12.74							60.6	69.8	60.3	69.8	55.0	65.2	61.78
−0 14.54	+0 12.69	14 20 14.39		+ 24 33 26.41				60.4	70.3	60.6	69.5	46.5	64.6	61.98
−0 15.08	−1 7.02	310 24 11.38					Means	60.57	69.73	60.27	69.57	45.38	64.92	61.738
15.83	7.01	12.14												—.185
15.53	7.00	11.85					May 6,		18h.	45m.				
15.61	6.99	11.94					179 59	57.0	72.0	57.5	73.7	42.5	63.6	61.05
15.76	6.98	12.10						55.8	72.0	58.0	73.0	43.5	61.6	60.65
15.59	6.98	11.93	62.63	+ 88 29 30.09	+65.11			56.6	71.0	57.8	73.4	43.0	63.6	60.90
15.01	6.97	11.36					P.	55.6	71.8	58.8	72.6	45.4	62.2	61.07
15.11	6.96	11.47						56.5	71.4	58.6	73.7	44.4	63.6	61.37
15.43	6.96	11.79						55.8	71.4	58.6	73.2	44.4	62.4	60.97
−0 15.61	−1 6.95	11.98					Means	56.22	71.60	58.22	73.27	43.87	62.83	61.000
														—.187

THERMOMETERS.

NADIR POINTS.	Stone.	Upper.	Lower.
	°	°	°
April 21, No. 1	54.3	66.5	60.0
		67.5	61.0
" 26, " 1	57.0	64.0	60.0
" 28, " 1	64.0	68.5	65.0
May 4, " 1		61.5	60.5
" 6, " 1	58.0	66.5	61.5
" " 2		55.5	53.5

3. Through haze.
4 to 13. Mic coincid. from the determinations of April 16 and 26.
8, 9, 13. Through clouds.
14 to 20. Ex. Ther. exposed to reflected rays.
23. Very faint.
27. —0″.07 applied for defective illumination.
28 to 38, 43 to 52. —0″.04 applied for errors of division.
42. —0″.04 applied for defective illumination.
44. Very unsteady.
May 6. Nadir Point, No. 1, mercury unsteady.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMO At.	Ext.	St
			No.	M. s.	° ′ ″	″	″	″	″	″	″	*Revs.*	*In.*	°	°	°
June 7	1	β^2 Scorpii, (Mic.)	5			"	"	"	"	"	"	30.215				
	2	δ Ophiuchi	4	. . .	42 10 35.6	41.8	33.2	47.0	14.2	39.8	35.27	. .	30.172	69.0	64.1	
	3	α Scorpii	4	. . .	64 56 54.6	58.0	52.7	64.7	30.5	57.0	52.92	. .	30.180	68.7	63.5	
21	4	Sun, N. L. (Mic.)	3	— 0 17.0	15 9 61.0	62.2	58.0	67.0	36.2	62.0	57.73	29.647	30.004	74.2	78.2	70.
	5	Sun, S. L.	5	+ 0 17.0	15 41 58.3	58.2	54.8	65.0	32.0	59.0	54.55	. .				
24	†6		1	— 0 49.5	54 28 32.5	31.0	27.3	39.8	5.8	32.0	28.07	30.167	30.208	75.5	71.0	75.
	7		3	— 0 16.5		"	"	"	"	"	"	.090				
	8	Moon, N. L. (Mic.)	4	0 0.0		"	"	"	"	"	"	.080				
	9		6	+ 0 31.0		"	"	"	"	"	"	.030				
	†10		7	+ 0 49.5		"	"	"	"	"	"	29.980				
July 6	11	Sun, S. L. (Mic.)	3	— 0 14.6	16 24 64.5	59.5	30.0	64.5	58.0	62.0	56.42	29.278	30.140	79.0	87.0	74.
	†12	Sun, N. L. (Mic.)	4	+ 0 17.4	15 53 73.5	69.0	67.3	75.5	40.7	72.3	66.38	. .				
	13	ε Ursæ Minoris (Mic.)	4	. . .	316 35 62.0	57.3	58.4	67.0	29.3	63.8	56.30	28.465	30.102	78.0	71.8	
	14	α Herculis	4	. . .	24 18 63.7	61.0	59.0	69.3	31.2	63.2	57.90	. .	30.100	77.0	71.2	
	15	β Draconis (Mic.)	4	. . .	346 27 60.0	55.3	56.5	63.6	27.7	60.6	53.95	29.283	30.098	76.7	71.2	
	16	α Ophiuchi	5	. . .	26 12 34.7	34.3	31.5	42.7	6.8	35.4	30.90*d*	. .				
	17	γ Draconis	4	. . .	347 22 73.0	71.0	72.0	79.7	42.6	74.6	68.82	. .	30.106	75.5	71.8	
	†18	α Lyræ	4	. . .	0 14 53.0	51.6	50.0	61.6	23.7	54.2	49.02	. .	30.100	75.0	70.5	
12	19	α Herculis	4	. . .	24 18 62.7	59.2	56.1	68.7	31.0	62.0	56.67	. .	29.990	79.0	76.5	
	20	α Ophiuchi	4	. . .	26 12 34.6	32.0	28.5	41.8	6.2	34.0	29.52	. .		78.8	76.0	77.
	21	γ Draconis	4	. . .	347 22 70.2	67.5	66.4	76.3	39.5	72.0	65.32	. .	29.980	78.4	75.5	
	†22	α Lyræ	4	. . .	0 14 50.8	48.3	46.2	58.7	21.0	51.8	46.13	. .	29.978	78.0	74.8	
	23	δ Aquilæ	4	. . .	36 3 59.6	56.8	53.5	65.6	28.2	58.8	53.78	. .	29.974	77.5	74.8	
	24	α Aquilæ	4	. . .	30 24 50.7	48.0	46.3	58.3	21.3	52.3	46.15	. .	29.974	77.0	74.5	
	25	β Aquilæ	4	. . .	32 50 69.5	69.2	64.7	79.2	40.0	71.3	65.65	. .				
	26	α^1 Capricorni (Mic.)	4	. . .		"	"	"	"	"	"	32.214	29.974	77.0	74.0	
	27	α^2 Capricorni	4	. . .	51 52 69.5	69.0	62.7	77.3	38.0	70.3	64.47	. .				
	†28	λ Ursæ Minoris	4	. . .	310 3 37.7	35.8	35.2	45.6	9.4	38.4	33.68	. .				
	29	ζ Cygni	4	. . .	9 16 77.0	74.5	73.6	88.2	48.6	76.3	73.03	. .		76.8	73.0	
	30	α Cephei	4	. . .	336 57 42.5	40.0	40.2	57.7	14.2	43.0	39.60	. .				
	31	β Aquarii	4	. . .	45 6 59.8	58.0	56.3	68.6	28.5	59.7	55.15	. .	29.960	76.5	73.0	
	32	β Cephei	4	. . .	329 0 50.5	49.3	48.2	57.0	20.8	51.5	46.22	. .	29.960			
	33	ε Pegasi	4	. . .	29 41 83.9	82.4	78.5	92.5	56.3	84.1	79.62*d*	. .	29.956	76.0	73.0	
15	†34	α Herculis	4	. . .	24 18 62.0	59.0	57.2	69.0	29.5	61.7	56.40	. .	30.064	76.0	70.0	78.
	†35	β Draconis (Mic.)	4	. . .	346 27 54.0	50.2	52.3	69.0	23.3	56.0	50.80	29.262	30.064	76.0	70.0	
	36	α Ophiuchi	5	. . .	26 12 32.0	31.1	28.2	41.2	3.3	32.2	28.00*d*	. .	30.064	75.7	70.5	
	37	γ Draconis	4	. . .	347 22 71.0	67.3	69.0	77.0	39.0	72.3	65.93	. .	30.058	75.0	70.8	
	†38	μ^1 Sagittarii	4	. . .	59 57 34.3	32.2	31.7	43.8	4.7	36.4	30.52*d*	. .	30.058	75.0	70.6	
	†39	α Lyræ	4	. . .	0 14 49.6	47.7	46.8	58.2	19.8	51.2	45.55	. .	30.066	74.3	70.4	
	40	β Lyræ	6	. . .	5 41 66.8	65.5	65.7	75.4	36.0	68.3	62.95	. .	30.066	74.0	70.2	
	41	ζ Aquilæ	4	. . .	25 14 40.0	39.3	36.5	49.0	9.3	39.4	35.58	. .	30.066	73.8	69.8	
	42	δ Aquilæ	4	. . .	36 3 58.3	56.4	56.2	66.0	26.7	59.0	53.77	. .	30.066	73.5	69.2	
19	†43	Sun, S. L. (Mic.)	3	— 0 16.5	18 14 64.7	59.6	58.6	68.0	31.3	64.2	57.73	29.683	30.240	84.0	87.5	79.
	44	Sun, N. L.	5	+ 0 15.5	17 43 53.0	49.2	46.3	57.6	20.5	52.6	46.53	. .				
	†45	α Lyræ	4	. . .	0 14 52.2	46.5	47.8	58.0	20.5	54.0	46.50	. .	30.192	82.7	81.0	
	46	β Lyræ	4	. . .	5 41 69.0	63.4	65.7	74.6	35.7	69.7	63.02	. .	30.192	82.5	81.0	
	†47	Lalande, 35137 (Mic.)	4	. . .		"	"	"	"	"	"	29.387				
	48	ζ Aquilæ	4	. . .	25 14 43.5	38.6	37.7	48.4	10.4	42.3	36.82	. .	30.192	82.3	81.5	
	†49	δ Aquilæ	4	. . .	36 3 62.0	55.8	56.3	65.2	27.0	60.8	54.52	. .	30.220	82.0	81.0	
August 2	†50	α Lyræ	4	. . .	0 14 46.1	45.3	43.4	57.9	15.5	45.4	42.93	. .	30.138	74.2	67.8	75.
	51	ζ Aquilæ	5	. . .	25 14 38.8	37.1	35.6	48.6	7.0	38.6	34.28	. .	30.136	73.2	67.8	
	†52	η Lyræ	4	. . .	359 59 76.8	75.2	73.9	88.9	45.2	78.0	73.00	. .				

DATE.	MICROMETER. Coincid.	Val. 1*r*.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
May 17, 15*h*.	30.0274	62.750			
June 21, 6*h*.	.0201		Sun	4	15 46.97
July 2, 7*h*.	.0215				
6, 7*h*.	.0196		Sun	11	15 48.30
12, 19*h*.	.0223				
19, 8*h*.	.0218		Sun	43	15 46.15

June 21. } Error of Runs +0″.82. Temp. of circle and stone 70°
July 6. } do. .92 do. do. 77
12. } do. .89 do. do. 78
15. do. .92 do. do. 77
19. do. .74 do. do. 75
Aug. 2.

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR Instrument.	Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.
″	′ ″	° ′ ″	″	° ′ ″	″	
11.50	+ 1 31.69	58 16 25.69	62.95	— 19 22 43.49	—30.00	P.
0.08	0 51.55	42 11 26.74		— 3 17 44.54	30.13	
0.21	2 1.34	64 58 54.05		— 26 5 11.85	26.01	
23.21	0 12.77	15 26 20.68	63.16	+ 23 27 21.73		
0.13	+ 0 13.23					
5.23						
2.66						
3.31	—28 43.51	53 59 41.48	63.08	— 15 5 59.15		
2.77						
1.26						
46 52	+ 0 13.70	16 10 8.34	64.54	+ 22 43 35.45		
0.42	+ 0 13.24					
37.62	— 0 52.81	316 36 41.11	63.68	+ 82 17 1.82	30.92	
0.21	+ 0 25.31	24 19 23.42		+ 14 34 19.51	24.15	
46.82	— 0 13.47	346 28 27.30		+ 52 25 15.63	23.38	
0.31	+ 0 27.57	26 12 58.78		+ 12 40 44.15	20.14	
0.40	— 0 12.53	347 22 56.69		+ 51 30 46.24	16.37	
0.07	+ 0 0.24	0 14 49.19		+ 38 38 53.74	4.75	
0.22	24.97	24 19 21.86	62.86	+ 14 34 20.25	25.21	
0.07	+ 0 27.22	26 12 56.81		+ 12 40 45.30	21.22	
0.41	— 0 12.39	347 22 53.34		+ 51 30 48.77	18.24	
0.06	+ 0 0.25	0 14 46.32		+ 38 38 55.79	— 6.61	
0.23	40.33	36 4 34.34		+ 2 49 7.77	+ 4.40	
0.04	32.53	30 25 18.72		+ 8 28 23.39	10.74	
0.19	35.78	32 51 41.24		+ 6 2 0.87	9.46	
17.00	1 10.48	51 51 57.95		— 12 59 15.84	13.56	
0.41	+ 1 10.59	51 54 15.47		— 13 0 33.36	13.69	
0.29	— 1 5.88	310 2 28.09		+ 88 51 14.02	23.65	
0.36	+ 0 9.09	9 17 21.76		+ 29 36 20.35	30.11	
0.46	— 0 23.64	336 57 16.42		+ 61 56 25.69	37.09	
0.29	+ 0 55.73	45 7 50.59		+ 6 14 8.48	26.98	
0.13	— 0 33.36	329 0 12.73		+ 69 53 29.38	41.65	
0.12	+ 0 31.69	29 42 51.91		+ 9 10 50.20	+32.08	
0.17	+ 0 25.34	24 19 21.91	63.06	+ 14 34 20.40	—25.60	
48.20	— 0 13.49	346 28 25.51		+ 52 25 16.80	25.85	
0.11	+ 0 27.58	26 12 55.47		+ 12 40 46.84	21.61	
0.32	— 0 12.53	347 22 53.72		+ 51 30 48.59	19.01	
0.09	+ 1 36.49	59 59 6.92		— 21 5 24.61	8.83	
0.08	0 0.24	0 14 45.71		+ 38 38 56.60	7.38	
0.54	5.60	5 42 9.09		+ 33 11 33.22	4.71	
0.05	26.45	25 15 2.08		+ 13 38 40.23	— 0.87	
0.13	40.89	36 4 34.79		+ 2 49 7 52	+ 4.07	
21.12	15.38	17 59 48.08	63.85	+ 20 53 55.02		
0.48	14.92					
0.05	0.24	0 14 46.69	62.30	— 38 38 54.86	— 8.49	
0.44	5.51	5 42 8.09		+ 33 11 33.46	5.76	
39.57	5.52	5 42 48.11		+ 33 10 53.44	5.73	
0.10	26.01	25 15 2.93		+ 13 38 38.62	— 1.62	
) 0.28	40.18	36 4 34.98		+ 2 49 6.57	+ 3.50	
) 0.10	0.23	0 14 43.06	64.12	+ 38 39 0.31	—12.15	C.
) 0.04	+ 0 26.61	25 15 0.85		+ 13 38 42.52	4.15	
) 0.76	0.00	0 0 13.76		+ 38 53 29.61	— 3.45	

THERMOMETERS.

R POINTS.	Stone.	Upper.	Lower.
	°	°	°
4, No. 1	72.5	71.0	70.5
7, " 1	70.0	72.0	70.0
" 1	70.0	76.0	73.5
" 1		75.5	74.0
" 1	74.0	87.0	81.0
" 2		79.0	77.0
" 1	77.0	77.0	77.5
1		77.0	77.0

6 to 10. Mic. coin. from June 21 & July 2.
18, 22, 39, 45, 50. —0″.11 applied for errors of division.
12. R'g. of mic. C. doubtful.
26, 27. Vertical wire doubtful.
28, 34. Faint.
35. Mic. coin. from July 12 and 19.
38. —0″.16 applied for errors of div'n.
43. Mic. recorded 29r.483.
47. Follows β Lyræ 2s. (9 mag.)
49. Cloudy.
52. —0″.19 applied for errors of div'n.

NADIR POINTS—READINGS.

	A.	B.	C.	D.	E.	F.	Means.
June 14.		15h.	30m.				
179° 59′	65″3	67″0	64″2	73″5	38″0	68″0	62″67
	65.1	68.5	65.3	73.3	39.4	67.4	63.17
	65.8	68.0	64.8	74.0	38.8	68.0	63.23
P.	63.8	68.0	64.8	73.0	38.8	67.2	62.60
	65.4	67.8	64.8	74.0	38.3	68.4	63.12
	64.3	68.7	64.8	74.0	39.0	66.7	62.92
Means	64.95	68.00	64.78	78.63	38.72	67.62	62.950
							—.192
June 17.		14h.	30m.				
179 59	65.0	68.2	63.0	73.5	38.7	67.5	62.65
	64.3	69.0	63.7	72.0	39.6	65.8	62.40
P.	64.8	68.5	63.3	73.0	39.3	67.2	62.68
	64.8	68.5	62.0	73.5	38.8	67.2	62.47
Means	64.72	68.55	63.00	73.00	39.10	66.93	62.550
							—.192
June 21.		6h.	30m.				
179 59	67.2	66.3	64.0	73.0	41.6	68.8	63.48
	66.2	66.8	64.0	73.0	41.6	68.0	63.27
P.	66.8	66.2	64.0	73.0	41.2	68.5	63.28
	66.8	66.8	64.0	73.0	41.2	68.5	63.38
Means	66.75	66.52	64.00	73.00	41.40	68.45	63.354
							.195
June 24.		15h.	40m.				
179 59	68.0	66.5	64.8	74.0	37.3	69.3	63.32
	67.0	67.5	65.3	73.8	37.8	67.7	63.18
P.	67.0	67.5	65.3	73.8	37.8	68.4	63.30
	67.0	67.5	65.3	73.8	37.8	68.4	63.30
Means	67.25	67.25	65.18	73.85	37.67	68.45	63.275
							—.195
July 6.		7h.	20m.				
179 59	71.4	68.0	66.5	74.2	39.0	71.0	65.02
	70.5	68.5	66.5	73.3	39.8	69.7	64.72
P.	70.7	67.8	65.8	74.0	38.5	70.3	64.52
	70.2	68.8	66.5	73.7	39.6	69.3	64.68
Means	70.70	78.28	66.32	73.80	39.23	70.07	64.733
							—.197
July 6.		16h.	40m.				
179 59	69.6	65.8	66.3	74.8	36.3	70.6	63.90
	69.2	76.3	67.0	74.3	37.4	69.5	63.95
P.	69.5	65.8	66.2	74.8	36.3	70.2	63.80
	69.5	65.5	66.6	74.8	37.0	69.7	63.85
Means	69.45	65.85	66.53	74.67	36.75	70.00	63.875
							—.195
July 12.		20h.	45m.				
179 59	66.5	66.4	63.6	75.3	35.7	68.7	62.70
	65.8	67.8	64.5	74.9	37.5	66.8	62.85
	66.7	67.3	63.6	75.4	36.0	68.0	62.83
P.	66.7	68.5	65.2	75.0	38.3	67.0	63.45
	67.0	67.4	64.0	76.2	36.6	68.5	63.28
	67.0	67.4	64.0	76.0	37.2	67.7	63.22
Means	66.62	67.47	64.15	75.43	36.88	67.78	63.055
							—.200
July 15.		16h.	40m.				
179° 59	68.6	64.8	65.7	74.0	34.7	69.5	62.88
	68.6	66.2	66.4	74.0	36.6	68.5	63.38
	69.0	66.0	66.0	75.0	35.0	69.7	63.45
P.	67.7	66.2	66.5	74.3	36.4	68.0	63.18
	68.7	65.7	65.7	75.3	35.2	69.7	63.38
	67.5	66.5	66.4	74.7	36.4	68.0	63.25
Means	68.35	65.90	66.12	74.55	35.72	68.90	63.256
							—.195

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M s.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
Aug. 2	†1	δ Aquilæ	4	. . .	36 3 56.6	55.9	54.3	67.7	24.9	57.5	52.82	. .	30.148	72.8	67.9		71.0	73.0
	2	γ Aquilæ	4	. . .	28 37 75.4	74.9	77.9	87.8	45.6	76.8	73.07	. .	30.154	72.5	67.4		70.2	72.8
	†3	α Cygni	4	. . .	354 8 82.9	83.0	81.1	94.8	54.4	85.0	80.20	. .	30.146	72.0	65.2	75.3	72.8	72.0
	4	61¹ Cygni	4	. . .	0 52 83.9	85.3	82.1	97.5	56.5	96.1	81.90	. .	30.142	71.8	65.5		69.5	70.8
	5	61² Cygni (Mic.)	4	. . .		"	"	"	"	"	"	29.999						
	6	α Cephei	4	. . .	336 57 36.5	34.8	35.9	46.7	7.1	39.2	33.37d	. .	30.144	71.5	65.0		69.8	71.7
	†7	β Cephei	4	. . .	329 0 44.0	44.9	45.1	55.0	14.9	46.8	41.78	. .			64.9		69.8	
	8	ε Pegasi (Mic.)	4	. . .	29 41 42.3	43.9	41.4	55.7	14.4	45.5	40.53	29.472	30.136	71.0	64.6		68.5	71.4
	9	ε² Aquarii, 7722	4	. . .	51 10 66.4	68.1	66.3	80.0	37.1	70.0	64.65	. .			63.4		68.3	70.8
	10	Neptune	4	. . .	51 4 73.0	75.4	73.0	86.5	43.2	76.4	71.25	. .	30.132	70.4	63.4	75.0	68.3	70.7
5	11		1	— 0 49.0	22 5 78.4	77.0	75.1	88.0	45.8	80.1	74.07	29.414	29.858	75.5	76.3	73.3	76.2	74.8
	12	Sun, S. L. (Mic.)	2	0 33.0		"	"	"	"	"	"	.411						
	13		3	— 0 17.0		"	"	"	"	"	"	.409						
	14		4†	+ 0 1.0	21 34 75.7	73.8	70.8	84.1	42.9	77.6	70.82	29.976					76.4	75.0
	15	Sun, N. L. (Mic.)	5	15.0		"	"	"	"	"	"	.971						
	16		6	31.0		"	"	"	"	"	"	.969						
	17		7	+ 0 47.0		"	"	"	"	"	"	.992		76.9				
	†18	α Lyræ	4	. . .	0 14 45.1	44.8	43.9	31.0	36.0	47.8	41.43	. .	29.740	72.0	66.5	74.0	72.2	72.2
	19	Juno	4	. . .	45 37 63.5	62.5	62.1	46.9	49.1	64.0	58.02	. .	29.738	71.7	66.7		71.2	72.4
	20	ζ Aquilæ	4	. . .	25 14 37.4	35.5	33.2	20.9	26.2	36.9	31.68	. .	29.738	71.5	65.5		69.4	71.5
	†21	η Lyræ	4	. . .	0 0 17.4	16.1	14.9	5.0	5.2	19.0	12.93	. .			64.8		68.5	71.0
	†22	δ Aquilæ	4	. . .	36 3 56.1	54.5	54.0	39.8	43.2	56.6	50.70	. .			64.0	74.0	68.0	70.5
	23			—13 14.5	310 3 24.8	24.3	22.5	8.8	15.0	26.9	20.23	. .	29.736	70.0	63.0	74.0	71.0	71.4
	24			8 54.5		28.8	28.2	26.9	13.2	19.2	30.3	24.43	. .					
	25			— 5 7.5		31.7	30.2	29.2	15.9	21.9	32.2	26.85	. .					
	†26	λ Ursæ Minoris		+ 0 4.5		32.0	30.9	29.0	16.5	22.0	33.0	27.23	. .			62.9	71.2	70.3
	27			3 55.5		31.9	29.9	28.9	16.1	21.1	33.0	26.82	. .					
	28			7 32.5		29.9	27.8	26.8	13.9	18.2	30.9	24.58	. .					
	29		5	+12 30.5		26.4	26.0	24.3	10.9	16.8	27.8	22.03	. .	29.730	69.5	62.7		69.5	70.0
	†30	ζ Cygni	4	. . .	9 16 71.8	72.1	70.5	58.1	60.1	71.3	67.32d	. .	29.724	68.2	64.0		69.7	70.5
	31	α Cephei	4	. . .	336 57 34.7	34.5	35.0	19.5	27.4	37.4	31.42d	. .	29.722	68.2	63.4		69.0	70.8
	32	β Cephei	4	. . .	329 0 43.7	43.8	44.5	29.3	33.6	46.8	40.28	. .	29.714	68.2	62.6		68.3	69.8
	33	ε Pegasi	4	. . .	29 42 19.4	19.4	18.0	6.2	10.6	20.9	15.75d	. .	29.708	68.0	61.9		66.5	68.5
	†34	ε² Aquarii, 7722	4	. . .	51 10 67.5	68.1	67.1	54.8	57.4	70.2	64.18	. .	29.702	67.0	60.8		66.0	66.3
10	35	Sun, N. L. (Mic.)	4	+ 0 1.0	22 59 61.0	58.2	54.4	42.7	51.4	61.6	54.88	30.376						
	36	Sun, S. L.	6	+ 0 33.0	23 31 19.2	16.4	13.3	0.0	11.7	19.7	13.38	. .	30.324	79.0	82.8	73.0	81.0	80.0
	†37	α Lyræ	4	. . .	0 14 44.2	41.3	40.2	29.2	36.8	48.3	40.00	. .	30.264	78.2	76·6		77.5	77.5
	38	β Lyræ	4	. . .	5 41 62.0	58.8	58.5	46.4	51.5	65.4	57.10	. .	30.260	78.2	76.3		77.5	77.5
	39	ζ Aquilæ	4	. . .	25 14 36.6	34.0	30.0	20.2	28.0	37.6	31.07	. .	30.268	78.0	76.0		77.5	77.0
	40	δ Aquilæ	4	. . .	36 3 57.0	53.5	52.3	38.8	46.4	58.3	51.05	. .	30.268	78.0	75.7		77.0	76.5
	41	γ Aquilæ	4	. . .	28 38 15.3	12.8	10.0	0.0	8.6	17.5	10.70	. .	30.268	78.0	75.2			
	42	β Aquilæ	4	. . .	32 50 67.5	65.0	61.8	53.3	57.3	70.4	62.55	. .	30.270	77.8	75.3			76.5
	43	α² Capricorni	4	. . .	51 52 69.3	67.8	63.0	54.0	59.0	72.3	64.23	. .	30.272	77.5	75.3			76.5
11	44	Weisse XVII, 83	4	. . .	47 58 26.4	21.5	18.1	10.0	17.4	28.2	20.27	. .	30.190	79.8	77.5	76.2	79.2	77.8
	45			— 3 26.8	312 18 46.6	41.9	43.0	29.2	37.4	49.9	41.33	30.138	30.206	78.5	75.9		77.7	77.2
	46			2 56.8								.132						
	47			2 26.8								.134						
	48			1 56.8								.124						
	49			— 1 26.8								.114						
	50	δ Ursæ Minoris (Mic.)		+ 1 18.2								.128						
	51			1 48.2								.128						
	52			2 18.2								.134						

DATE.	MICROMETER. Coincid.	Val. 1r.
	revs.	″
Aug. 2, 18h.	30.0495	62.750
5, 9h.	.0462	
10, 10h.	.0480	
11, 19h.	.0500	

OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
		′ ″
Sun . .	11	15 49.54
Sun . .	35	15 49.66

August 5. Error of Runs +0″.88. Temp. of circle and stone 73°
10. do. .88 do. do. 75
11. do. .88 do. do. 77

August 5, 17h. Adjusted micrometer heads of microscopes D and E.

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR		Corrected Readings.	Zenith Point.	Apparent Declinations.	Reduction to	Observers.	NADIR POINTS—READINGS.						
Instrument.	Objects.		359° 59′		1850.0			A.	B.	C.	D.	E.	F.	Means.
′ ″	′ ″	° ′ ″	″	° ′ ″	″									
								July 17.	16h.	15m.				
0.11	+ 0 41.10	36 4 33.81	64.12	+ 2 49 9.56	+ 1.62	C.	179° 59′	68″8	65″5	64″5	75″8	33″4	70″2	63″03
0.22	+ 0 30.87	28 38 44.16		+ 10 14 59.21	5.26			67.0	65.7	64.5	74.7	34.6	68.2	62.45
0.07	— 0 5.81	354 9 14.46		+ 44 44 28.91	18.80			68.5	65·7	64.5	75.7	33.4	70.2	63.00
0.17	+ 0 0.87	0 53 33.94		+ 38 0 20.43	31.83		P.	68.0	65.7	64.5	75.3	34.3	68.7	62.75
3.34	+ 0 0.87	0 53 26.11		+ 38 0 17.26	31.27			68.5	65.7	64.5	75.7	33.4	69.6	62.90
0.07	— 0 24.15	336 57 9.29		+ 61 56 34.08	29.76			68.0	65.7	64.5	75.7	34.0	69.2	62.35
0.06	— 0 34.10	329 0 7.62		+ 69 53 35.75	33.33		Means	68.13	65.67	64.50	75.48	33.85	69.35	62.830
36.28	+ 0 32.40	29 42 49.23		+ 9 10 54.14	28.11									—.197
0.08	1 10.67	51 12 15.24		— 12 18 31.87	+29.28									
0.02	1 10.19	51 6 21.42		— 12 12 38.05				July 19.	8h.	15m.				
39.80							179 59	70.4	65.0	63.6	75.0	35.0	71.0	63.33
39.85	0 19.20							69.7	66.0	65.2	74.8	37.0	70.0	63.78
39.92								70.7	66.0	64.4	76.0	37.0	71.3	64.23
4.37		21 51 23.58	64.33	+ 17 2 20.00			P.	70.7	66.5	65.0	76.0	37.0	70.7	64.32
4.78	18.69							70.7	66.5	65.0	76.0	37.0	70.7	64.32
5.08								70.7	66.5	65.0	76.0	37.0	70.7	64.32
3.88							Means	70.48	66.08	64.70	75.63	36.67	70.73	64.050
0.06	0.23	0 14 41.60	63.60	+ 38 39 1.25	—12.95									—.205
0.38	53.98	45 38 52.38		— 6 45 9.53				July 19.	16h.	30m.				
0.07	26.38	25 14 58.13		+ 13 38 44.72	4.75		179 59	69.0	62.8	64.5	74.0	33.6	70.0	62.32
0.21	0.00	0 0 12.72		+ 38 53 30.13	— 4.34			67.0	62.4	64.0	72.0	34.0	67.7	61.18
0.16	+ 0 40.88	36 4 31.74		+ 2 49 11.11	+ 1.16			70.0	63.5	65.0	74.4	34.7	70.6	63.03
7.13	— 1 6.78	310 2 20.58						68.8	63.7	65.0	73.0	35.2	68.6	62.38
3.36	.78	21.01						69.7	63.7	65.0	74.3	35.2	69.8	62.95
1.28	.79	21.34						69.0	64.3	65.3	74.3	35.5	70.0	63.07
0.24	.79	20.68		+ 88 51 21.95	15.55		Means	68.92	63.40	64.80	73.67	34.70	69.45	62.489
0.85	.80	20.87												—.191
2.48	.81	20.24												
6.36	— 1 6.82	21.57						August 2.	20h.	0m.				
0.13	+ 0 9.17	9 17 16.62		+ 29 36 26.23	23.38		179 59	66.9	67.5	64.9	80.1	33.9	69.8	63.85
0.07	— 0 23.89	336 57 7.60		+ 61 56 35.25	28.57			67.1	68.8	66.2	79.0	35.9	69.6	64.43
0.08	— 0 33.78	329 0 6.42		+ 69 53 36.43	32.14			67.8	68.1	66.1	80.3	35.1	70.0	64.57
0.10	+ 0 32.12	29 42 47.97		+ 9 10 54.88	27.48			67.6	69.0	66.0	81.0	35.5	69.9	64.83
0.12	1 10.03	51 12 14.09		— 12 18 31.24	+28.98		C.	67.7	68.1	65.9	80.6	35.0	69.5	64.47
20.40	0 20.16	23 15 44.30	63.78	+ 15 37 58.73		P.		66.9	67.9	65.5	79.8	35.8	68.9	64.13
0.10	20.68							66.9	68.1	65.2	79.2	34.2	69.9	63.92
0.04	0.24	0 14 40.20	63.20	+ 38 39 2.25	—14.02			67.1	68.9	65.4	79.8	34.9	69.7	64.30
0.41	5.57	5 42 2.26		+ 33 11 40.19	11.07		Means	67.25	68.30	65.65	79.98	35.03	69.67	64.312
0.12	26.31	25 14 57.50		+ 13 38 44.95	— 5.47									—.194
0.27	40.65	36 4 31.97		+ 2 49 10.48	+ 0.65			August 5.	9h.	40m.				
0.44	30.52	28 38 41.66		+ 10 15 0.79	3.94		179 59	70.0	67.1	64.6	78.9	33.2	71.6	64.23
0.21	0 36.08	32 51 38.42		+ 6 2 4.03	5.06			70.1	67.9	66.2	78.9	34.1	71.6	64.78
0.47	1 11.12	51 54 15.88		— 13 0 33.43	+12.14			70.0	67.8	66.1	79.0	33.1	71.8	64.63
0.36	+ 1 1.50	47 59 22.13	63.54	— 9 5 39.34	—22.95	C.	C.	69.7	68.1	65.4	78.8	33.7	71.2	64.48
3.79	— 1 1.11	312 17 36.58						69.8	67.9	65.9	79.0	33.9	71.5	64.67
3.79	.11	36.58						69.5	67.9	65.6	78.1	33.8	71.6	64.42
4.22	.12	36.14					Means	69.85	67.78	65.63	78.77	33.63	71.55	64.536
3.86	.12	36.50												—.202
3.42	.12	36.94												
4.35	.13	36.00		+ 86 36 6.62	—17.78			August 5.	19h.	30m.				
4.18	.13	36.17					179 59	66.8	68.9	67.9	54.0	56.0	68.9	63.75
4.21	.13	36.14						67.6	68.5	68.1	54.6	55.5	70.0	64.05
								67.1	68.9	68.1	54.0	56.3	68.6	63.83
							C.	67.4	68.0	67.5	54.2	54.9	69.6	63.60
								67.9	67.9	67.5	54.5	54.9	70.0	63.78
								67.4	68.7	67.8	54.1	56.1	68.5	63.77
							Means	67.37	68.48	67.82	54.23	55.62	69.27	63.797
														—.195
								August 10.	9h.	40m.				
							179 59	69.5	67.0	65.2	52.2	59.4	71.8	64.20
								68.6	67.0	65.2	52.2	60.0	70.4	63.90
								69.0	67.0	65.2	52.2	58.8	71.0	63.87
							P.	68.5	67.0	65.2	52.2	59.7	70.3	63.82
								68.7	67.5	65.2	52.2	60.2	70.8	64.10
								68.5	67.5	65.2	52.2	60.0	70.8	64.03
							Means	68.80	67.17	65.20	52.20	59.70	70.85	63.986
														—.202

THERMOMETERS.

NADIR POINTS.	Stone.	Upper.	Lower.
	°	°	°
July 17, No. 1	77.0	80.5	79.5
19, " 1	79.0	86.0	83.5
" 2	81.0	83.5	83.5
August 2, " 1	75.3	71.0	73.0
		73.0	73.4
5, " 1	73.3	77.0	75.0
" 2	74.0	71.0	68.3
		71.2	72.2
10, " 1		80.0	76.5

1, 3 to 7, 18 to 22, 30 to 34. Very unsteady.
18, 37. —0″.11 applied for errors of div'n.
21. —0″.19 do do.
26. 28s before passing wire IV.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	m. s.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
August 11	1	δ Ursæ Minoris (Mic.)		+ 2 48.2								30.148						
	2			+ 3 18.2	312 18 47.0	42.1	42.9	29.9	37.9	50.0	41.63	.157			75.7			
	†3	ω Lyræ	5		0 14 43.5	40.6	38.4	27.0	35.6	47.5	38.77				75.8	76.3	77.7	77.3
	4	ζ Aquilæ	4		25 14 36.3	34.1	31.4	18.9	28.0	37.1	30.97		30.206	78.3	74.9		77.5	77.0
	†5	η Lyræ	4		0 0 16.6	13.7	12.0	0.8	7.9	19.6	11.77				75.0		77.4	77.2
	6	γ Aquilæ	4		28 37 75.6	73.0	70.7	58.9	68.6	78.1	70.82		30.208	77.7	74.2		77.5	77.0
	7	α Aquilæ	4		30 24 47.4	45.1	43.4	29.9	40.0	51.4	42.87							
	8	β Aquilæ	4		32 50 67.2	65.4	63.1	50.4	58.1	70.8	62.58		30.204	77.5	74.5		76.8	77.5
	9		3†	−13 3.7	310 3 23.1	19.1	18.6	4.2	15.1	26.0	17.68		30.200	77.5	74.6		76.6	76.8
	10			8 30.7		26.9	22.9	21.8	7.8	19.4	29.2	21.33						
	11			5 27.7		28.6	24.6	23.6	9.9	20.9	30.9	23.08			74.5		76.5	76.8
	†12	λ Ursæ Minoris		− 1 8.7		30.1	25.6	24.4	10.9	21.9	31.7	24.10						
	13			+ 2 56.3		30.2	25.7	24.2	10.2	21.4	31.7	23.90			74.4		76.6	76.8
	14			+10 56.3		26.2	21.3	20.2	7.1	17.5	27.7	20.00						
	15	α Cygni	4		354 9 21.0	19.0	18.0	3.1	15.8	24.0	16.82		30.204	77.5	74.0		76.6	76.8
	16	ζ Cygni	4		9 16 69.6	68.2	65.1	51.7	60.0	70.5	64.18d		30.200	77.2	73.8	76.2	76.4	76.7
	17	α Cephei	4		336 57 33.7	29.9	30.5	14.5	27.0	36.1	28.62d		30.190	77.0	73.1		75.2	76.0
	18	β Cephei	4		329 0 40.8	39.0	40.1	23.0	34.1	44.0	36.83				73.0		75.7	76.0
	19	ε Pegasi	4		39 42 18.2	17.0	14.1	2.0	12.0	21.3	14.10d		30.196	77.0	73.6		75.5	76.5
12	20	Sun, N. L. (Mic.)	3	− 0 15.5	23 34 62.5	60.0	57.3	43.4	51.6	63.7	56.42	29.897	30.194	76.8	72.9		75.0	76.2
	21	Sun, S. L.	5	+ 0 15.5	24 6 55.8	53.0	50.7	37.7	45.0	57.0	49.87		30.188	79.2	84.4	76.0	83.0	79.5
18	†22	α Lyræ	4		0 14 45.0	40.0	41.8	27.2	34.4	46.0	39.07							
	23	ζ Aquilæ	4		25 14 37.8	34.0	33.2	19.4	26.3	36.6	31.22		29.932	75.2	71.4	79.0	75.0	75.5
	24	δ Aquilæ	4		36 3 56.0	51.2	51.7	37.0	42.2	56.2	49.05		29.944	75.0	70.8		74.0	75.5
	25	γ Aquilæ	4		28 37 74.5	71.3	70.4	57.2	63.3	75.4	68.68		29.948	74.5	69.8		74.0	75.5
	26	α Aquilæ	4		30 24 45.2	41.2	42.4	28.0	34.6	47.0	39.73		29.944	74.5	69.2			
	27	β Aquilæ	4		32 50 67.6	65.0	64.5	49.8	54.5	69.2	61.77							
	†28	α^1 Capricorni (Mic.)	4			,,	,,	,,	,,	,,	,,	32.240	29.944	74.2	68.9		73.0	75.5
	†29	α^2 Capricorni	4		51 52 69.5	66.5	65.2	51.7	56.3	70.7	63.32							
	30	α Cygni	4		354 9 20.0	16.0	18.4	1.5	10.3	21.8	14.67		29.936	74.0	68.0		73.0	75.0
	31	61^1 Cygni	4		0 53 21.6	19.3	19.0	5.3	12.6	23.4	16.87		29.946	74.0	67.6		73.0	75.0
	32	ϵ^2 Aquarii, 7722 (Mic.)	4		51 10 35.3	33.2	32.8	18.3	26.7	36.0	30.38	29.522	29.948	73.5	67.5		73.0	74.5
	33	Anonymous (Mic.)	4			"	"	"	"	"	"	27.560						
	34	Neptune	7		51 14 23.8	22.8	21.0	8.0	14.5	24.5	19.10		29.946	72.3	65.2			73.0
	35	Saturn, N. L.	4		48 20 16.3	13.8	14.2	0.8	6.5	17.0	11.43		29.946	71.7	64.8		70.5	72.0
	36	Saturn, S. L. (Mic.)	4			"	"	"	"	"	"	29.738						
19	†37		1	− 0 49.0	25 46 38.0	37.1	34.9	23.5	28.2	39.8	33.58	29.856			75.5	75.7		
	38	Sun, N. L. (Mic.)	2	0 34.0		"	"	"	"	"	"	.856						
	39		3	− 0 18.0		"	"	"	"	"	"	.853						
	40		5	+ 0 16.0	26 18 47.4	46.4	43.0	31.2	35.6	49.2	42.13	30.275						
	41	Sun, S. L. (Mic.)	6	32.0		"	"	"	"	"	"	.270						
	†42		7	+ 0 47.0		"	"	"	"	"	"	.290	30.020	74.0	75.5		75.2	
	43		1	− 0 50.0	56 25 18.1	13.8	13.9	1.5	5.8	20.2	12.22							
	44	Moon, N. L. (Mic.)	4	− 0 0.5		"	"	"	"	"	"	30.020						
	45	"	5½	+ 0 21.1		"	"	"	"	"	"	29.985	30.004	75.5	73.0	75.8	75.5	75.2
	46	"		+ 0 47.0		"	"	"	"	"	"	.989						
	†47			− 3 12.9	312 18 43.3	36.4	39.9	25.1	30.2	44.2	36.52							
	48	(Mic.)		+ 0 29.1								30.024						
	49	δ Ursæ Minoris "		0 54.1								.032						
	50	"		1 19.1								.038						
	51			+ 2 24.1		43.2	36.5	39.9	25.9	30.1	43.9	36.58						
	†52	51 (Hev) Cephei, S. P. (Mic.)		− 1 2.2	306 10 . .		15.8	17.8	6.1	8.0	23.7	15.53	30.218				73.8	73.5

DATE.	MICROMETER. Coincid.	Val. 1r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Aug. 12, 10h.	30.0446	62.750	Sun.	20	15 52.26
18, 20h.	.0485		Saturn	35	0 9.73
19, 12h.	.0443		Sun	37	15 51.64
16h.	.0506				

Aug. 12. } Error of Runs +0″.88. Temp. of circle and stone, 75°
18. }
19. do. .85 do. 75°

Assumed Latitude 38° 53′ 39″.25 North.

No. for rel.	CORRECTIONS FOR Instrument.	CORRECTIONS FOR Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.	NADIR POINTS—READINGS.	A.	B.	C.	D.	E.	F.	Means.
	′ ″	′ ″	° ′ ″	″	° ′ ″	″									
1	—0 4.89	.13	312 17 35.46				C.	August 10.		18h.	0m.				
2	—0 5.11	— 1 1.14	35.23					179° 59′	68′6	66′8	64′3	52′8	57′7	71′3	63′58
3	+0 0.32	+ 0 0.23	0 14 39.32	63.54	+38 39 3.47	—14.19			67.5	66.4	64.8	52.3	58.5	70.3	63.30
4	+0 0.09	26.31	25 14 57.37		+13 38 45.42	5.58			68.2	66.4	64.2	53.0	58.2	71.0	63.50
5	—0 0.23	0.00	0 0 11.54		+38 53 31.25	— 5.74		P.	67.8	66.4	64.2	53.0	58.2	70.4	63.33
6	+0 0.38	30.52	28 38 41.72		+10 15 1.07	+ 3.84			67.8	66.4	64.2	53.0	58.2	70.4	63.33
7	+0 0.05	32.79	30 25 15.71		+ 8 28 27.08	5.81			67.8	66.4	64.2	53.0	58.2	70.4	63.33
8	—0 0.18	+ 0 36.06	32 51 38.46		+ 6 2 4.33	4.97		Means	67.95	66.47	64.32	52.85	58.17	70.63	63.397
9	+0 7.00	— 1 6.31	310 2 18.37												—.200
10	3.15	.31	18.17					August 11.		21h.	50m.				
11	1.46	.32	18.21		+88 51 24.51	13.61		179 59	68.1	67.9	65.0	52.1	58.0	70.9	63.67
12	0.35	.33	18.12						68.3	67.9	64.9	52.1	58.2	71.1	63.75
13	0.63	.33	18.20						68.9	67.1	64.9	51.9	58.1	71.2	63.68
14	5.00	1 6.38	18.62					C.	68.0	67.2	65.6	51.6	58.9	70.4	63.62
15	0.12	— 0 5.73	354 9 11.21		+44 44 31.58	15.89			68.6	67.2	65.2	52.2	57.3	71.6	63.68
16	0.14	+ 0 9.15	9 17 13.47		+29 36 29.32	21.79			68.5	68.2	65.9	52.0	59.2	70.5	64.05
17	+0 0.07	— 0 23.83	336 57 4.86		+61 56 37.93	26.43		Means	68.40	67.58	65.25	51.98	58.28	70.95	63.741
18	—0 0.10	— 0 33.63	329 0 3.10		+69 53 39.69	29.93									—.197
19	+0 0.11	+ 0 31.94	29 42 46.15		+ 9 10 56.64	+26.42		August 12.		9h.	40m.				
20	+0 9.23	20.57	23 51 18.48	64.38	+15 2 25.15		P.	179 59	72.6	67.5	67.8	52.8	58.0	74.3	65.50
21	—0 0.23	21.10							70.8	66.8	67.2	51.5	59.9	71.8	64.52
22	—0 0.06	0.24	0 14 39.25	63.78	+38 39 3.78	—15.64			71.4	65.8	66.4	51.5	56.8	72.8	64.12
23	+0 0.08	26.29	25 14 57.59		+13 38 45.44	6.58		P.	71.2	67.0	67.0	51.0	58.2	72.5	64.48
24	0.20	40.68	36 4 29.93		+ 2 49 13.10	— 0.30			71.2	67.0	66.7	52.0	57.4	72.8	64.52
25	0.33	30.54	28 38 39.55		+10 15 3.48	+ 2.85			70.5	67.4	66.7	51.3	58.8	71.5	64.37
26	+0 0.05	32.83	30 25 12.61		+ 8 28 30.42	4.87		Means	71.28	66.92	66.97	51.68	58.03	72.62	64.582
27	—0 0.15	36.13	32 51 37.75		+ 6 2 5.28	4.13									—.202
28	—2 17.02	1 11.22	51 51 57.52		—12 58 14.49	11.91		August 18.		18h.	0m				
29	+0 0.35	+ 1 11.32	51 54 14.99		—13 0 31.96	12.00		179 59	71.0	65.5	67.4	51.4	54.7	72.0	63.67
30	0.12	— 0 5.75	354 9 9.04		+44 44 32.99	13.82			70.4	66.2	68.4	51.4	56.4	71.0	63.96
31	0.31	+ 0 0.87	0 53 18.05		+38 0 24.98	26.73			70.8	65.6	67.8	51.4	55.3	71.8	63.78
32	33.24	1 9.97	51 12 13.59		—12 18 30.56	28.39		P.	71.0	66.2	68.4	51.7	56.5	71.8	64.27
33	2 36.28	1 10.05	51 14 16.71		—12 20 33.68	+28.60			70.7	66.2	68.4	51.7	56.0	71.3	64.05
34	+0 0.67	1 9.87	51 15 29.64		—12 21 46.61				70.7	66.2	68.4	51.7	56.4	71.3	64.12
35	—0 0.03	1 2.60	48 21 23.73		— 9 27 40.70			Means	70.77	65.98	68.13	51.55	55.88	71.53	63.975
36	+0 19.43	1 2.61													—.200
37	11.77						C.	August 19.		16h.	30m.				
38	11.65	0 23.11						179 59	71.5	66.7	67.9	55.0	55.5	73.0	64.93
39	+0 11.76								71.2	66.1	68.2	53.3	56.2	70.9	64.32
40	—0 14.02		26 3 0.06	64.50	+12 50 3.69				71.5	66.8	68.9	53.9	56.5	71.5	64.85
41	13.61	+ 0 23.67						C.	71.7	66.8	68.2	54.6	56.9	71.0	64.87
42	—0 14.68								71.2	66.8	68.6	54.0	56.1	71.0	64.62
43	+0 2.10								71.0	67.0	68.2	54.7	55.8	71.0	64.62
44	1.92							Means	71.35	66.70	68.33	54.25	56.17	71.40	64.700
45	2.90	—29 43.94	55 55 30.27		—17 1 46.52										—.200
46	1.05							August 19.		22h.	30m.				
47	1.43	— 1 1.91	312 17 36.07					179 59	68.2	68.5	68.2	55.8	55.4	70.4	64.42
48	1.95	.91	36.59						68.5	68.9	68.3	56.4	55.8	70.5	64.73
49	1.44	.92	36.07	64.57	86 36 7.81	—19.55			68.4	68.2	68.2	56.4	55.5	70.8	64.58
50	1.25	.92	35.88					P.	68.8	68.9	68.3	56.6	56.1	70.8	64.92
51	+0 0.90	— 1 1.93	35.52						68.9	68.9	68.5	57.0	56.1	70.9	65.05
52	—0 10.54	— 1 17.08	305 8 47.91						68.8	69.2	68.8	57.5	56.4	70.6	65.22
								Means	68.60	68.77	68.38	56.62	55.88	70.67	64.820
															—.194

THERMOMETERS.

NADIR POINTS.	Stone.	Upper.	Lower.
	°	°	°
Aug. 10, No. 2	75.0	79.5	77.5
11, " 1	76.2	75.0	76.4
		76.0	76.8
12, " 1	76.0	84.0	79.0
18, " 1	79.0	77.0	77.0
19, " 1	75.8	75.7	75.5
		76.0	75.6
19, " 2	75.0	67.5	70.0
		71.2	72.0

32. App. R. H. 22 M. 2 S. 30 (6 mag.)
33. 22 4 5 (8)

3, 47 to 52. Very unsteady.
3, 22. —0″.11 applied for errors of division.
5. —0″.19 do. do. do.
12. 2m 54s after passing IV.
28, 29. Faint.
37 to 42. Clouds passing: very unsteady.
52 Mean=⅛ (C+D) +⅛ (E+F) +⅛ (B+C+F) —0″.10.

Aug. 12. Nadir Point, mercury unsteady.
Aug. 19. Nadir Points, some parallax of the wires.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOME At.	Ext.	St.
			No.	M. S.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°
August 19	†1			— 0 42.2								30.216				
	2			22.2								.220				
	†3	51 (Hev.) Cephei, S.P.(Mic.)		— 0 2.2								.215				
	4			+ 0 22.8								.200				
	5			0 37.8								.215				
	6			0 57.8								.222				
	7			+ 1 17.8								.212				
	†8	α Lyræ	5	. . .	0 14 42.2	38.4	39.2	27.2	31.0	45.0	37.17	. .	30.028	72.0	65.5	
	9	ζ Aquilæ	4	. . .	25 14 37.2	33.9	32.6	21.1	24.9	37.1	31.13	. .	30.028	71.0	64.9	
	†10	η Lyræ	4	. . .	0 0 16.1	12.9	12.8	2.4	2.8	17.5	10.75	. .				
	11	δ Aquilæ	4	. . .	36 3 56.1	52.2	52.9	39.8	42.1	57.4	50.08	. .	30.030	70.5	64.6	
	12	γ Aquilæ	4	. . .	28 38 15.0	10.9	11.7	0.2	3.0	15.9	9.45	. .	30.030	70.0	64.1	
	13	α Aquilæ	4	. . .	30 24 47.1	43.2	43.0	31.0	36.9	49.2	41.73	. .				
	14	β Aquilæ	4	. . .	32 50 68.1	65.5	64.7	52.5	54.7	69.8	62.55	. .	30.038	69.8	63.7	75.5
	†15	(Ref.)		—12 25.8	229 56 54.5	49.4	51.1	38.8	40.1	57.1	48.50	. .	30.040		62.5	75.5
	16	(Dir.)		7 25.8	310 3 29.0	24.1	26.1	12.0	16.9	29.1	22.92	. .				
	†17	λ Ursæ Minoris . (Ref.)	4	— 0 12.8	229 56 50.1	41.6	46.5	34.1	35.8	52.7	43.97	. .			63.0	
	18	(Dir.)		+ 6 14.2	310 3 30.1	25.8	26.2	13.6	18.4	30.0	24.02	. .				
	†19	(Ref.)		+10 44.2	229 56 53.9	49.9	51.3	38.6	40.1	56.3	48.35	. .	30.038	69.5	62.7	
	20	α Cygni	4	. . .	354 9 20.2	17.2	18.8	5.0	10.1	21.8	15.52	. .	30.040	69.5	62.7	
	†21	61¹ Cygni	4	. . .	0 53 20.8	19.4	18.1	6.8	9.9	22.9	16.32	. .			62.5	
	22	61² Cygni (Mic.) . . .	4	. . .		"	"	"	"	"	"	29.985				
	23		2	— 1 7.9	203 2 34.2	30.3	29.5	19.0	21.7	35.9	28.43d	29.762	30.050	69.5	62.0	
	24	α Cephei (Mic.) (Ref.) .	3	0 32.4								.816				
	25		3½	— 0 13.6								.812				
	26	α Cephei	6	+ 1 2.4	336 57 31.6	28.0	30.5	15.4	22.2	33.0	26.78d	. .				
	27			— 0 44.0	329 0 33.7	29.9	32.3	18.2	23.1	35.0	28.70	29.932	30.048	69.5	61.8	
	28	β Cephei (Mic.) . . .	3½	0 22.2								.936				
	†29	ε Pegasi	4	. . .	29 42 18.7	16.0	16.3	4.0	8.9	19.1	13.83d	. .	30.046	69.5	61.8	
	30	e^2 Aquarii 7722 . . .	4	. . .	51 10 67.2	65.6	66.2	51.8	55.1	68.8	62.45	. .	30.042	69.5	61.0	
	31	Neptune	4	. . .	51 14 57.5	56.9	56.8	41.7	46.2	59.0	53.02	. .	30.043	69.2	60.8	75.0
	32	Weisse XXII, 105 (Mic.)	4	. . .		"	"	"	"	"	"	32.048				
20	33	Sun, S. L. (Mic.) . .	3	0 16.0	26 38 21.5	19.7	18.6	5.5	10.2	20.4	15.98	30.158	30.084	70.7	72.2	72.0
	34	Sun, N. L.	5	+ 0 15.0	26 6 30.0	28.2	27.6	14.7	18.4	28.2	24.52	. .				
25	†35	α Lyræ	4	. . .	0 14 42.9	40.6	39.9	27.9	32.5	44.8	38.10	. .	30.284	73.0	65.6	72.8
	36	ζ Aquilæ	4	. . .	25 14 36.6	33.6	30.6	21.5	24.0	36.1	30.40	. .	30.284	72.0	65.2	
	†37	η Lyræ	4	. . .	0 0 14.7	11.4	11.0	1.0	1.0	15.6	9.12	. .			65.0	
	†38		3	—13 9.5	310 3 22.9	19.2	19.2	6.4	10.0	22.4	16.68	. .	30.277	70.0	63.1	
	39			8 37.5		26.4	23.1	22.4	9.8	14.3	26.9	20.48	. .			
	†40			4 47.5		29.6	26.0	25.6	12.9	17.8	29.2	23.52	. .		62.1	
	41	λ Ursæ Minoris		— 1 7.5		29.9	27.0	26.3	13.7	18.6	29.9	24.23	. .	30.270		
	42			+ 3 12.5		29.0	26.2	25.3	12.5	17.2	29.0	23.20	. .		61.7	
	43			7 13.5		27.4	24.0	23.1	10.6	14.4	27.3	21.13	. .			
	44		5	+12 22.5		23.4	19.9	19.1	6.5	10.0	23.5	17.07	. .	30.268	68.5	61.4
	†45	α Cygni	4	. . .	354 9 18.3	17.4	17.7	3.8	8.8	19.9	14.32	. .	30.266	68.2	61.4	
	46	61¹ Cygni	4	. . .	0 53 20.0	19.8	17.9	7.2	10.1	21.6	16.10	. .	30.262	67.0	60.5	
	†47	61² Cygni (Mic.) . . .	4	. . .		"	"	"	"	"	"	29.986				
	48		3	— 0 34.0	336 57 17.7	15.9	16.8	3.2	6.9	19.5	13.33d	29.859	30.264	67.0	61.1	
	49	α Cephei (Mic.) . . .		— 0 7.0								.868				
	50	α Cephei (Ref.) . . .	7	+ 1 36.8	203 2 48.9	50.0	48.1	35.6	38.1	51.5	45.37d	. .				
	51	β Cephei	4	. . .	329 0 38.1	38.0	38.9	24.4	29.0	40.1	34.75	. .	30.265	66.8	61.0	
	52	ε Pegasi	4	. . .	29 42 16.6	14.2	14.9	4.9	6.1	18.5	12.53	. .	30.260	67.0	60.8	

DATE.	MICROMETER. Coincid.	Val. 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Aug. 20, 10h.	30.0460	62.750	Sun . .	33	15 52.79
18h.	.0480				
25, 22h.	.0491				

August 20. Error of Runs +0″.88. Temp. of circle and stone 75°
25. do. .74 do. do. 72°

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR Instrument	CORRECTIONS FOR Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.	NADIR POINTS—READINGS.						
								A.	B.	C.	D.	E.	F.	Means
′ ″	′ ″	° ′ ″	″	° ′ ″	″									
−0 10.33	− 1 17.08	305 8 48.12				C.	August 20.		10h.	20m.				
10.54	.09	47.90					179° 59′	71″5	68″8	68″4	55″2	55″8	71″6	65″22
10.22	.09	48.32	64.57	+ 87 15 4.21	+17.11			70.8	69.7	70.0	54.8	58.3	70.2	65.63
								71.5	69.3	69.0	55.8	57.2	71.8	65.77
10.54	.09	47.90					P.	70.9	69.8	69.2	55.5	57.7	71.3	65.73
10.26	.09	48.18						70.9	69.8	69.2	55.5	57.4	70.9	65.62
10.78	.10	47.65						70.9	69.8	69.2	55.5	57.4	70.9	65.62
−0 10.10	− 1 17.10	48.32					Means	71.08	69.53	69.17	55.38	57.30	71.12	65.597
+0 0.35	+ 0 0.23	0 14 37.75		+ 38 39 6.07	−15.85									−.209
+0 0.06	26.67	25 14 57.86		+ 13 38 45.96	6.74									
−0 0.21	0.00	0 0 10.54		+ 38 53 33.28	7.63		August 20.		17h.	50m.				
+0 0.17	41.21	36 4 31.46		+ 2 49 12.36	− 0.25		179 59	71.7	67.7	69.2	54.5	56.0	71.0	65.02
0.27	30.94	28 38 40.66		+ 10 15 3.16	+ 2.69			71.0	68.5	70.0	53.6	58.6	69.2	65.15
0.04	33.27	30 25 15.04		+ 8 28 28.78	4.72			71.6	67.5	69.2	54.7	56.3	71.0	65.05
+0 0.12	0 36.62	32 51 39.29		+ 6 2 4.53	3.98		P.	71.0	68.2	70.0	54.4	58.4	69.5	65.25
−0 6.25	+ 1 7.53	229 57 49.78						71.3	67.2	68.6	54.4	55.8	70.4	64.62
								70.5	68.2	69.5	54.4	57.5	69.6	64.95
+0 2.38	− 1 7.48	310 2 17.82					Means	71.18	67.88	69.42	54.33	57.10	70.12	65.005
−0 0.21	+ 1 7.46	229 57 51.22		+ 88 51 25.77	11.00									−.187
+0 1.74	− 1 7.47	310 2 18.29		(Ref.).39										
−0 4.72	+ 1 7.50	229 57 51.13					August 25.		22h.	40m.				
+0 0.09	− 0 5.82	354 9 9.79		+ 44 44 34.03	13.50		179 59	68.1	68.1	68.1	56.7	54.9	71.6	64.58
0.21	+ 0 0.88	0 53 17.41	64.63	+ 38 0 26.47	26.41			68.9	69.4	68.1	57.0	54.9	71.1	64.90
								69.5	69.1	68.0	57.1	55.1	71.3	65.02
4.31	0.88	0 53 21.51		+ 38 0 22.37	25.86		C.	68.9	69.3	68.1	57.1	55.9	71.0	65.05
16.67	24.22	203 3 9.32						69.4	69.9	68.9	57.0	56.2	71.0	65.40
14.27	24.22	6.92		+ 61 56 42.53				69.1	69.8	68.9	57.1	55.8	71.2	65.32
14.85	+ 0 24.22	7.50			23.63		Means	68.98	69.27	68.35	57.00	55.47	71.20	65.048
1.47	− 0 24.22	336 57 4.03		39.85										−.195
7.59	34.21	329 0 2.09												
		1.79		+ 69 53 41.94	27.04		August 26.		10h.	45m.				
7.29	− 0 34.20						179 59	71.4	67.5	68.2	54.8	55.0	71.2	64.68
+0 0.10	+ 0 32.48	29 42 46.41		+ 9 10 57.47	25.16			70.8	68.5	69.0	53.8	56.8	70.6	64.92
−0 0.11	1 10.77	51 12 13.11		− 12 18 29.23	28.33			70.8	68.8	68.0	55.2	55.4	71.2	64.90
+0 0.01	1 10.73	51 16 3.76		− 12 22 19.88			P.	70.5	68.8	68.8	55.2	57.0	70.5	65.13
−2 5.30	1 10.87	51 13 58.59		− 12 20 14.71	+28.70			70.5	68.3	68.4	55.2	56.0	71.0	74.90
+0 6.58	0 24.27							70.5	68.3	68.4	55.2	56.0	71.0	74.90
		26 22 40.88	65.40	+ 13 31 3.77		P.	Means	70.75	68.37	68.47	54.90	56.03	70.92	64.905
−0 0.12	23.69													−.201
−0 0.06	0.24	0 14 38.28	64.85	+ 38 39 5.82	−16.79	C.								
+0 0.06	26.88	25 14 57.34		+ 13 38 46.76	7.39									
							August 26.		22h	30m.				
−0 0.20	+ 0 0.00	0 0 8.92		+ 38 53 35.18	− 8.79		179 59	69.5	67.7	64.4	55.2	53.0	70.5	63.38
+0 6.93	− 1 7.99	310 2 15.62						69.2	69.0	65.3	55.0	55.0	69.6	63.85
3.07	8.06	15.49						69.6	68.0	64.4	55.5	53.3	61.3	63.69
1.05	8.10	16.47					P.	69.2	68.3	65.2	55.5	54.7	69.2	63.68
0.20	8.13	16.30		+ 88 51 28.44	+ 9.16			70.2	68.0	64.6	55.0	53.6	70.7	63.85
0.55	8.15	15.60						69.5	68.5	65.0	55.0	55.5	69.4	63.82
2.19	8.17	15.15					Means	69.53	68.25	64.82	55.37	54.18	70.12	63.711
6.14	1 8.19	15.02												−.196
0.06	− 0 5.88	354 9 8.50		+ 44 44 35.60	11.81									
0.18	+ 0 0.89	0 53 17.17		+ 38 0 26.93	24.71		August 27.		11h.	0m.				
4.13	+ 0 0.89	0 53 21.12		+ 38 0 22.98	24.17		179 59	71″1	68.0	67.1	55.9	53.7	73.1	64.82
11.99	− 0 24.44	336 57 0.88						70.8	68.5	67.8	56.0	55.0	72.2	64.88
								71.0	67.9	67.0	55.2	54.0	73.1	64.70
+0 11.36	− 0 24.44	0.25		+ 61 56 43.54			C.	71.0	68.8	67.8	55.9	54.7	72.8	65.17
−0 1.20	+ 0 24.44	203 3 8.61		43.01	21.56			71.1	68.2	67.8	55.7	54.6	72.9	65.05
								70.4	68.2	67.6	55.0	55.8	71.8	64.80
0.05	− 0 34.51	329 0 0.19		+ 69 53 43.91	24.87		Means	70.90	68.27	67.52	55.45	54.63	72.65	64.903
−0 0.16	+ 0 32.78	29 42 45.15		+ 9 10 58.95	+24.25									−.207

THERMOMETERS.

NADIR POINTS.	Stone.	Upper.	Lower.
	°	°	°
Aug. 20, No. 1	72.0	74.0	72.5
" 2		72.0	71.5
25, " 1	72.2	67.2	68.0
		68.5	68.8
26, " 1	70.5	74.5	72.0
" 2	71.0	68.5	70.0
27, " 1	70.0	76.7	73.0
		77.0	72.5

32 App. R H. M. S. 22 5 49 (8.9 mag.)

1 to 8, 21 to 29, 45 to 47. Very unsteady.
3. 2s. before passing IV.
8, 35. −0″.11 applied for errors of division.
10, 37. −0″.19 " " "
15, 17, 19. Mercury unsteady.
19. Nearly obscured by clouds.
38 to 45. Partially obscured by clouds.
40. 1m 13s before passing IV.

August 19. Nadir Point by obs. of λ Urs. Min. 0° 0′ 4″.38.
" " " a Cephei 5″.97.
25. " " a Cephei 4″.59.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means.	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M. s.	° ′ ″	″	″	″	″	″	″	Revs.	In	°	°	°	°	°
Aug. 25	†1		1	— 0 47.0	47 44 63.7	61.5	60.6	49.5	50.1	64.8	58.37	29.038	30.256	66.8	59.2	72.2	67.8	68.5
	2	Moon, S. L. (Mic.)	2	31.5	"	"	"	"	"	"	"	.108						
	†3		3	— 0 14.2	"	"	"	"	"	"	"	.142						
	†4		4†	+ 0 6.0	47 12 18.4	17.1	15.0	4.9	7.1	19.5	13.67d	30.049					65.6	67.5
	5		5†	18.5	"	"	"	"	"	"	"	.084						
	6	Moon, N. L. "	6	30.0	"	"	"	"	"	"	"	.139						
	7		7†	+ 0 49.2	"	"	"	"	"	"	"	.172						
26	8	Sun, S. L. "	3	— 0 15.0	28 39 61.0	56.3	57.7	43.5	47.4	59.5	54.23	29.895	30.214	71.0	73.0	70.5	73.0	71.5
	9	Sun, N. L.	5	+ 0 16.0	28 8 24.0	20.2	18.6	7.0	13.7	23.7	17.87	. .						
	10	Venus, N. L.	4	. . .	48 6 38.2	33.8	33.4	22.3	27.3	40.0	32.50	. .	30.182	73.5	77.0			73.0
	11	e^2 Aquarii, 7722 (Mic.)	4	. . .	51 14 62.7	59.6	58.0	45.4	49.0	62.0	56.12	33.798	30.130	69.0	62.0			69.0
	12	Neptune "	4	. . .	"	"	"	"	"	"	"	26.207						
	13	Weisse XXII, 105 (Mic.)	5	. . .	"	"	"	"	"	"	"	32.120						
	14	Saturn, N. L.	4	. . .	48 34 29.5	26.4	24.0	15.2	18.0	29.6	23.78		30.122	69.0	61.2		66.5	69.0
	15	Saturn, S. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	29.750						
	†16		4	+ 0 0.5	42 26 56.8	54.8	54.4	41.0	44.0	57.6	51.43	30.052	30.112	68.5	61.2		66.0	68.5
	17	Moon, N. L. "	5	14.9	"	"	"	"	"	"	"	.148						
	18		7	+ 0 45.6	"	"	"	"	"	"	"	.240						
	19		3	—10 5.5	310 24 67.6	64.0	65.2	49.3	51.0	65.5	60.28	29.890	30.088	67.0	61.2		65.0	67.0
	20			8 5.5								.866						
	21			6 5.5								.828						
	22			4 5.5								.820						
	23			2 5.5								.810						
	24	Polaris (Mic.)	4	— 0 2.5								.805						
	25			+ 1 57.5								.808						
	26			3 57.5								.823						
	27			5 57.5								.837						
	28			7 57.5								.865						
	†29		7	+ 9 22.5								.900	30.086	66.6	61.2			
	30	Mercury, S. L.	4	. . .	22 42 34.9	32.7	30.2	20.4	24.6	36.0	29.80d	. .	30.082	71.8	76.8	69.8	74.0	72.0
	†31	Mercury, N. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	30.178						
27	†32		4	— 0 27.0	28 29 62.5	60.1	60.1	48.8	48.8	64.3	57.43	30.735	30.078	74.5	79.5		75.7	72.7
	33	Sun, N. L. "	3†	— 0 13.0	"	"	"	"	"	"	"	.748						
	34		4	+ 0 1.0	"	"	"	"	"	"	"	.745						
	35			24.0	29 0 34.8	33.1	32.8	24.1	26.1	36.9	31.30	29.618					76.0	72.5
	36	Sun, S. L. "	6†	36.0	"	"	"	"	"	"	"	.572						
	†37		7	+ 0 47.0	"	"	"	"	"	"	"	.604			80.5			
30	†38	e^2 Aquarii, 7722 "	4	. . .	51 10 62.5	58.9	57.0	46.0	48.1	64.1	56.10	29.928	30.143	73.0	69.0	73.0	72.3	73.5
	39	Neptune	4	. . .	51 21 24.6	20.3	19.2	9.4	12.3	25.5	18.55	. .			68.8		72.5	72.5
	40	Saturn, S. L.	7	. . .	48 41 63.2	57.3	57.0	46.4	47.9	63.6	55.90	. .	30.134	72.5	68.8		72.7	
	41	Saturn, N. L. (Mic.)	7	. . .	"	"	"	"	"	"	"	30.323						
	42	α Pegasi	4	. . .	24 29 62.4	57.4	56.9	45.8	46.0	62.1	55.10	. .	30.136	72.7	68.8		71.7	72.8
31	43	Venus, N. L.	4	. . .	49 45 32.0	25.0	27.2	33.0	22.0	13.8	25.50	. .	30.098	79.5	86.0	73.0	83.5	77.0
Sept. 6	44	Neptune	4	. . .	51 25 18.1	14.9	16.3	4.4	4.4	19.8	12.98	. .	30.126	74.8	65.0	78.8	70.0	73.5
	†45	Saturn, S. L.	4	. . .	48 54 28.6	24.9	24.8	14.0	16.1	30.5	23.15	. .	30.148	72.5	63.0		70.3	73.5
	46	Saturn, N. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	30.368						
	47	α Ursæ Majoris, S. P.	4†	+ 0 7.0	281 32 40.7	38.2	38.8	25.7	27.8	42.2	35.57d	. .	30.146	72.0	62.9		69.4	72.7
	48	γ Cephei	4½	+ 0 39.0	322 7 38.6	34.3	37.5	23.1	26.3	40.1	33.32d	. .	30.150	71.5	63.2		68.4	72.7
	49	α Andromedæ	4	. . .	10 38 35.5	34.4	34.2	22.1	25.3	37.3	31.47	. .			63.0		67.5	72.7
	50		4	—14 54.0	310 24 68.1	65.0	67.8	51.1	53.1	69.1	62.37	. .	30.146	70.5	64.1	77.5	68.4	72.5
	51		3	10 9.0	74.2	70.9	73.2	57.5	59.1	75.2	68.35	. .						
	52	Polaris		5 54.0	76.5	74.1	76.5	60.7	63.2	77.9	71.48	. .			64.1		68.2	72.4

DATE.	MICROMETER. Coincid.	Val. 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Aug. 25,		62.750	Moon .	1	16 37.54
26, 11h.	30.0495		Sun .	8	15 53.60
1h.	.0517		Saturn	14	0 9.45
13h.	.0468		Mercury	30	0 4.15
27, 11h.	.0462		Sun .	32	15 53.19
30, 22h.	.0500		Saturn	40	0 8.55
Sept. 1, 11h.	.0475				
6, 23h.	.0474		Saturn	45	0 9.98

Aug. 26.	Error of Runs	+0″.88.	Temp. of circle	and stone	75°
27.	do.	.98	do.	do.	70
30.	do.	.75	do.	do.	73
31.	do.	.94	do.	do.	76
Sept. 6.	do.	.94	do.	do.	78

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR Instrument.	Object.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.
′ ″	′ ″	° ′ ″	″	° ′ ″	″	
+0 53.84						
52.68	—60 20.35	46 45 31.57	64.85	— 7 51 47.47		C.
54.12						
1.32						
1.67						
0.54	—26 50.00	46 45 25.12		— 7 51 41.02		
2.25						
9.67	+ 0 26.59					
+0 0.42	25.99	28 24 36.88	64.70	+ 10 29 7.07		P.
−0 0.28	1 6.11	48 7 38.33		— 9 13 54.38		
−3 55.13	1 10.84	51 12 11.83	63.52	— 12 18 29.06	+28.15	
+4 1.40	1 10.95	51 20 8.47		— 12 26 25.70		
−2 9.49	1 10.92	51 13 57.55		— 12 20 14.78	28.54	
+0 0.06						
+0 18.96	1 3.96	48 35 37.25		— 9 41 54.48		
−0 0.03						
2.95	—23 35.94	42 3 13.75		— 3 9 30.98		
−0 2.25						
+0 15.31	— 1 6.96	310 24 8.63				
14.94	.96	8.26				
15.87	.96	9.19				
15.32	.96	8.64				
15.30	.96	8.62				
15.39	.96	8.71		+ 88 29 34.30	59.28	
15.39	.96	8.71				
15.06	.96	8.41				
15.21	.96	8.53				
14.89	.96	8.21				
+0 13.97	— 1 6.96	7.29				
+0 0.07	+ 0 19.80					
−0 8.09	19.65	22 42 45.52	64.70	+ 16 10 58.43		C.
43.19						
44.05	25.86					
−0 43.87						
+0 26.88						
29.85	26.45	28 45 32.78		+ 10 8 11.17		
27.92						
+0 7.51	+ 1 9.91	51 12 13.52	64.24	— 12 18 30.03	28.20	
−0 0.18	1 10.14	51 22 28.51		— 12 28 45.02		
+0 0.31	1 3.30					
−0 16.78	1 3.29	48 42 50.96		— 9 49 7.47		
+0 0.01	0 25.68	24 30 20.79		+ 14 23 22.70	+34.70	
−0 0.08	1 8.41	49 46 33.83	65.53	— 10 52 49.05		P.
−0 0.02	1 10.81	51 26 23.77	65.70	— 12 32 38.82		C.
+0 0.07	1 4.53					
−0 19.88	+ 1 4.52	48 55 17.77		— 10 1 32.82		
+0 0.02	— 4 31.60	281 28 3.99		+ 62 34 19.04	−44.72	
0.39	— 0 44.30	322 6 49.41		+ 76 46 55.54	+49.06	
0.34	+ 0 10.71	10 38 42.52		+ 28 15 2.43	+40.37	
11.40	— 1 6.73	310 24 7.04				
5.26	6.73	6.87				
1.74	— 1 6.72	6.48				

NADIR POINTS—READINGS.

	A.	B.	C.	D.	E.	F.	Mean
August 30.		22h.	30m.				
179° 59′	69″9	67″5	67″0	54″3	56″1	71″1	64″32
	69.8	67.8	66.4	54.8	55.5	71.5	64.30
	69.9	67.8	67.0	54.4	56.1	72.0	64.53
C.	70.4	68.1	66.6	55.0	55.5	71.8	64.57
	69.9	68.0	66.9	55.3	55.6	71.7	64.57
	69.6	68.0	66.2	55.0	55.4	71.8	64.33
Means	69.92	67.87	66.68	54.80	55.70	71.65	64.43
							—.19
August 31.		12h.	15m.				
179 59	74.3	67.0	70.5	53.2	58.6	73.0	66.10
	72.3	67.1	70.2	52.4	59.2	71.5	65.45
	73.5	67.1	70.2	53.0	58.2	72.4	65.73
P.	72.7	67.3	70.0	53.4	58.8	72.4	65.77
	73.1	67.3	70.0	53.7	58.7	72.4	65.87
	72.5	67.3	69.3	53.7	58.4	72.0	65.53
Means	73.07	67.18	70.03	53.23	58.65	72.28	65.74
							—.20
September 6.		22h.	30m.				
179 59	70.8	70.1	69.8	57.0	57.4	71.9	66.17
	70.9	69.9	69.5	57.1	56.1	72.7	66.03
	70.6	69.7	70.1	56.7	56.1	72.1	65.88
C.	71.2	69.6	69.2	57.4	55.1	73.2	65.95
	70.7	69.5	69.1	57.0	56.0	71.9	65.70
	70.9	69.9	69.5	56.0	55.8	72.1	65.70
Means	70.85	69.78	69.53	56.87	56.08	72.32	65.90
							—.20
September 14.		12h.	0m.				
179 59	69.0	68.6	69.6	55.2	54.6	69.0	64.33
	69.0	69.6	70.0	54.7	56.4	67.4	64.52
	69.4	69.6	69.6	55.3	56.2	68.5	64.77
P.	69.4	69.6	70.0	55.2	56.2	68.5	64.83
	69.4	69.6	70.0	55.5	56.2	69.5	64.83
	69.4	69.6	69.5	55.3	56.2	69.5	64.75
Means	69.27	69.43	69.78	55.18	55.97	68.40	64.67
							—.19
September 16.		3h.	15m.				
179 59	69.5	68.4	64.5	56.0	53.3	71.4	63.85
	69.5	69.9	66.0	57.0	54.6	69.5	64.42
	69.5	68.8	65.3	57.4	53.5	70.7	64.20
P.	69.5	69.3	65.8	56.6	54.3	69.4	64.15
	70.0	68.8	65.2	57.2	53.3	70.6	64.18
	69.3	69.5	65.5	57.0	54.5	69.8	64.27
Means	69.55	69.12	65.38	56.87	53.92	70.23	64.17
							—.19
September 21.		19h.	30m.				
179 59	72.2	68.8	67.8	56.8	54.0	71.3	65.15
	71.8	69.5	67.8	56.4	55.5	71.2	65.37
	71.8	69.5	67.8	56.4	55.5	71.2	65.37
P.	71.8	69.5	68.0	56.4	55.5	71.2	65.40
	71.3	69.2	67.2	57.0	54.3	71.2	65.03
	71.3	69.5	67.0	57.0	55.2	70.8	65.23
Means	71.70	69.33	67.70	56.67	55.00	71.15	65.26
							—.19
September 27.		22h.	20m.				
179 59	67.3	66.9	63.8	55.1	52.1	68.8	62.33
	67.4	66.5	64.3	56.0	52.3	68.9	62.57
	66.6	66.1	64.2	54.2	52.1	67.6	61.80
C.	67.4	66.4	64.1	55.9	51.9	69.2	62.48
	66.8	66.2	64.3	55.1	53.1	67.8	62.20
	67.1	66.1	63.0	51.8	51.1	68.8	61.98
Means	67.10	66.37	63.95	55.35	52.08	68.52	62.22
							—.19

THERMOMETERS.

NADIR POINTS.	Stone.	Upper.	Lower.
	°	°	°
Aug. 30, No. 1	73.0	72.5	72.5
		73.8	72.8
31, " 1	73.0	82.0	76.5
Sept. 6, " 1	78.8	71.2	74.0
		73.8	74.5
14, " 1	66.0	65.5	65.0
16, " 1		64.0	63.5
21, " 1		66.0	65.0
27, " 1	66.0	65.5	65.0
		66.8	66.2

13. App. R H. M. S. 22 5 49

1 to 3. +1″.28 applied for def. illu'n.
4, 16. On fixed wire.
19 to 29, 50 to 52. −0″.04 applied for errors of division.
31. −0″.15 applied for def. illu'n.
32 to 37. Through thin clouds.
38. Seven obs. with mic. red. to mer.
45. Very unsteady.
49. +0″.18 applied for errors of div'n.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M. S.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
Sept. 6	1	URANUS	4		32 38 53.7	53.7	52.8	37.1	40.9	54.6	48.80	. .	39.144	70.5	63.9			
	†2	Polaris		+ 4 54.0	310 24 76.9	74.3	76.2	64.0	62.8	77.9	71.52	. .			63.6		67.5	72.4
	3		5	9 13.0	74.2	71.1	73.4	58.1	58.9	76.1	68.63	. .						
	†4			13 21.0	69.6	65.9	68.5	52.8	52.9	70.9	63.43	. .	30.144	70.5	63.1		67.5	72.7
	5	*a* Cassiopeiæ	4	. . .	343 11 65.4	62.3	65.5	47.5	51.2	66.8	59.78*d*	. .	30.146	70.5	64.0		68.5	72.3
14	6	SUN, N. L.	6	+ 0 30.0	35 8 31.8	30.8	30.2	16.6	21.0	30.0	26.73	. .	30.178	62.3	61.2	66.0	64.5	65.0
27	7	Anonymous	4	. . .	51 24 31.1	29.0	26.6	19.3	20.6	32.6	26.53	. .	29.813	65.8	63.4	65.5	64.5	65.0
	†8	Anonymous (Mic.)	4	. . .	"	"	"	"	"	"	"	35.571						
	†9	*β* Aquarii	4	. . .	45 6 53.8	52.1	51.5	42.2	40.5	55.2	49.22	. .	29·812	65.8	63.3		64.8	65.2
	†10	*ε* Pegasi	4	. . .	29 41 72.8	69.7	68.4	60.0	59.2	73.5	67.27*d*	. .	29.810	65.5	63.3		64.6	65.0
28	11	*ζ* Cygni	4	. . .	9 16 54.8	55.0	53.0	56.8	45.4	57.3	53.72	. .	29.838	66.5	61.5	66.0		
	12	*ε* Pegasi	4	. . .	29 41 72.0	72.2	67.9	61.2	56.6	71.8	66.95	. .	29.834	66.0	60.2			64.0
	13	*γ* Cephei	4	. . .	322 7 26.0	20.5	20.8	12.0	12.5	24.3	19.35	. .	29.850	65.0	56.0			
	14	*γ* Pegasi	4	. . .	24 32 59.7	58.0	54.2	43.4	44.4	58.0	52.95	. .	29.850	65.0	55.5	66.5	64.0	64.0
	15	*α* Cassiopeiæ	4	. . .	343 11 55.3	52.0	53.6	38.7	43.3	56.7	49.93	. .	29.848	64.0	55.6		62.0	63.0
	16	*β* Ceti	4	. . .	57 41 29.5	28.3	27.2	17.8	20.0	31.3	25.68	. .						
29	17	*ζ* Cygni	4	. . .	9 16 57.4	52.7	54.3	45.9	42.9	58.3	51.92	. .	29.876	62.8	55.0	65.8	61.8	63.4
	18	*α* Cephei	4	. . .	336 57 19.2	16.2	16.6	4.4	5.8	20.0	13.70*d*	. .	29.876	62.5	54.9		61.4	63.0
	†19	*β* Aquarii	4	. . .	45 6 53.5	51.1	50.2	39.5	39.4	54.1	47.97	. .	29.876	62.4	54.8		61.5	62.8
Oct. 1	20	SUN, N. L. (Mic.)	3	− 0 15.8	41 44 66.2	65.8	61.5	52.0	51.8	67.3	60.77	30.360	29.866	67.2	77.1	64.0	71.5	66.5
	21	SUN, S. L.	5	+ 0 15.2	42 16 51.5	49.5	48.2	37.2	39.0	52.5	46.32	. .						
	22	Weisse XIX, 1259 (Mic.)	3	. . .	53 19 42.0	37.0	37.3	25.3	29.7	43.0	35.72	32.340	29.862	71.0	68.8		68.5	
	†23	IRIS, "	5	. . .	"	"	"	"	"	"	"	31.937						
	24	Weisse XIX, 1319 "	4	. . .	"	"	"	"	"	"	"	35.842						
	25	*α* Cygni	4	. . .	354 8 69.6	65.0	66.0	51.4	55.4	70.5	62.98	. .	29.870	70.0	66.8		70.0	
	26	61 Cygni	4	. . .	0 52 71.5	66.5	66.0	54.2	57.0	71.1	64.38	. .	29.874	70.0	66.2			68.5
	27	*ζ* Cygni	4	. . .	9 16 59.3	55.0	55.0	44.7	45.0	58.0	52.83	. .			65.8			
	28	*β* Aquarii	4	. . .	45 6 55 3	51.5	52.1	39.4	41.6	55.0	49.15	. .						
	29	*β* Cephei	4	. . .	329 0 25.0	19.2	21.2	7.8	11.7	25.2	18.35	. .	29.878	69.2	65.0		67.7	68.0
	30	*ε* Pegasi	4	. . .	29 42 12.0	6.3	10.5	2.8	2.0	10.8	7.40	. .	29.876	69.0	65.9	69.0	69.0	68.0
4	31	*β* Ursæ Minoris	4	. . .	324 7 31.0	31.2	30.4	24.0	20.8	33.5	28.48	. .	30.170	63.8	64.2	60.3	65.5	63.0
	32	*α* Coronæ Borealis	4	. . .	11 39 28.5	27.5	24.9	15.2	20.8	29.4	24.38	. .	30.158	61.0	64.0		65.5	63.0
	†33	IRIS	4	. . .	53 16 26.2	24.8	22.3	15.0	14.4	27.5	21.70	. .	30.106	63.0	55.0		61.0	61.5
	34	Weisse XIX, 1319 (Mic.)	4	. . .	"	"	"	"	"	"	"	32.813						
	35	*γ* Pegasi	4	. . .	24 32 53.8	54.8	53.8	38.8	41.2	51.8	49.03	. .	30.072	58.0	47.5		56.0	57.0
	36	URANUS	4	. . .	33 3 42.5	43.5	37.8	31.0	35.4	41.2	38.56	. .	30.020	55.5	46.6		54.5	
	37	*α* Arietis	4	. . .	16 8 59.5	60.6	60.4	50.2	48.2	59.8	56.45	. .	30.024	53.9	46.4			
	38	*γ* Ceti	4	. . .	36 17 27.5	28.8	28.5	18.5	19.6	29.0	25.32	. .	30.024	53.8	46.0			
8	39	*ζ* Cygni	4	. . .	9 16 55.6	56.3	53.8	43.8	44.0	56.1	51.60	. .	29.592	63.9	58.4	63.8	62.5	62.5
	40	*α* Cephei	4	. . .	336 56 75.0	72.8	71.2	58.5	63.0	75.9	69.40*d*	. .	29.586	63.0	58.4		61.8	62.2
	41	*β* Cephei	4	. . .	329 0 21.3	20.5	18.1	6.9	10.8	22.0	16.60	. .	29.580	62.5	58.1		61.7	62.2
	42	*ε* Pegasi	4	. . .	29 41 71.7	70.7	66.0	57.6	59.2	72.5	66.28*d*	. .	29.582	62.5	57.9		61.2	61.9
	43	NEPTUNE	4	. . .	51 39 50.9	51.2	48.0	39.1	40.1	54.1	47.23	. .	29.574	61.8	57.8		61.0	
	44	Aquarii, (7740)	4	. . .	50 41 17.1	17.6	13.9	5.9	6.9	21.1	13.75	. .	29.574	61.5	58.0		61.0	61.5
	45	SATURN, N. L.	4	. . .	49 41 11.2	11.8	8.7	0.0	0.8	15.0	7.92	. .	29.578	61.0	57.5		60.8	61.0
	46	SATURN, S. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	29.754						
	47	*α* Pegasi	4	. . .	24 29 52.3	52.1	49.2	39.1	41.0	54.0	47.95	. .	29.574	61.0	57.3	63.8	61.5	61.2
9	48	*η* Ursæ Majoris	4	. . .	348 49 15.5	15.0	17.5	4.8	8.8	16.9	13.08	. .	29.754	62.0	62.0			
	49	*α* Bootis	4	. . .	18 54 33.6	31.8	34.0	21.4	26.0	30.8	29.60	. .	29.748	62.5	62.5		65.0	64.5
	50	Weisse XIX, 1319	4	. . .	53 13 33.5	32.2	27.0	19.7	20.7	35.0	28.02	. .	29.784	64.0	58.5			
	51	Anonymous (Mic.)	5	. . .	53 11 59.6	58.0	55.0	47.0	44.4	58.4	53.73	31.753	29.782	63.8	58.2	63.0	62.5	
	52	Anonymous "	6	. . .	"	"	"	"	"	"	"	32.312						

DATE.	MICROMETER. Coincid.	Val. 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Sept. 14, 18*h*.	30.0518	62.750			
16, 19*h*.	.0500				
21, 20*h*.	.0505				
27, 21*h*.	.0085				
29, 21*h*.	.0123				
Oct. 1, 13*h*.	.0121		Sun	20	16 3.92
4, 13*h*.	.0111				
8, 23*h*.	.0135		Saturn	45	0 8.13

Sept. 14. Error of Runs +0″.54 Temp. of circle and stone 60°
27. do. .73 do. 66
28. do. .54 do. 60
29. do. .60 do. 65
Oct. 1. do. .54 do. 60
4. do. .70 do. 60
8. do. .65 do. 64
9. do. .87 do. 63

Sept. 27. Found fixed hor. wire much disturbed.
Oct. 8. Fixed hor. wire divided beyond V

ASSUMED LATITUDE 38° 53′ 39″.25 NORTH.

ORRECTIONS FOR strument.	Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.
′ ″	′ ″	° ′ ″	″	° ′ ″	″	
0 0.13	+ 0 36.21	32 39 25.14	65.70	+ 6 14 19.81		C.
1.18	— 1 6.67	310 24 6.01		+ 88 29 38.51	+55.77	
4.33	.64	6.30				
9.14	1 6.60	5.96				
0.12	— 0 17.18	343 11 42.72		+ 55 42 2.23	47.85	
0.32	+16 31.30	35 24 58.35	64.48	+ 3 28 45.38		P.
0 0.07	1 10.50	51 25 37.10	62.04	— 12 31 55 81	20.96	C.
5 48.81	1 10.25	51 19 47.97		— 12 26 6.68	20.94	
0 0.19	0 56.53	45 7 45.56		— 6 14 4.27	22.38	
0 0.12	32.15	29 42 39.54		+ 9 11 1.75	21.01	
0 0.19	9.25	9 17 2.78	61.70	+ 29 36 38.17	12.03	S.*
0.21	+ 0 32.36	29 42 39.10		+ 9 11 1.85	20.90	
0 0.22	— 0 44.50	322 6 34.63		+ 76 47 6.32	37.54	
0 0.28	+ 0 26.17	24 33 19.40		+ 14 20 21.55	36.28	P.
0 0.14	— 0 17.30	343 11 32.49		+ 55 42 8.46	41.02	
0 0.11	+ 1 30.32	57 42 55 89		— 18 49 14.94	37.21	
0 0.13	+ 0 9.38	9 17 1.43	62.26	+ 29 36 40.08	11.86	C.
0 0.11	— 0 24.43	336 56 49.38		+ 61 56 52.13	11.38	
0 0.12	+ 0 57.60	45 7 45.45		— 6 14 3.94	22.33	
21.66	43.37	42 1 26.40	62.92	— 3 7 44.23		P.
0.25	44.24					
2 26.17	1 14.74	53 18 24.29	61.88	— 14 24 43.16	9.25	
2 0.53	1 14.49	53 18 45.68		— 14 25 4.45		
6 5.87	+ 1 14.57	53 14 44.42		— 14 21 3.29	9.72	
0 0.18	— 0 5.75	354 8 57.41		+ 44 44 43.72	3.87	
0 0.38	+ 0 0.87	0 53 5.63		+ 38 0 35.50	16.63	
0 0.29	9.19	9 17 1.73		+ 29 36 39.40	11.58	S.
0.28	+ 0 56.45	45 7 45.32		— 6 14 4.19	22.31	P.
0.05	— 0 33.81	328 59 44.49		+ 69 53 56.64	13.35	
0.34	+ 0 32.05	29 42 39.11		+ 9 11 2.02	+20.66	S.
0 0.40	— 0 42.14	324 6 45.94	63.04	+ 74 46 56.35	—49.78	
0 0.11	+ 0 11.75	11 39 36.24		+ 27 14 6.05	—45.69	
0 0.16	1 13.17	53 17 34.71	62.00	— 14 23 53.46		P.
2 56.03	1 17.24	53 14 42.91		— 14 21 1.66	+ 9.87	
0 0.30	0 26.79	24 33 16.12		+ 14 20 25.13	38.57	S.
0.29	37.92	33 3 16 77		+ 5 50 24.48		
0 0.11	17.00	16 9 13.56		+ 22 44 27.69	36.94	
0 0.18	43.13	36 18 8.27		+ 2 35 32.98	31.75	
0 0.17	+ 0 9.23	9 17 0.66	61.34	+ 29 36 39.93	11.00	C.
0 0.10	— 0 24.03	336 56 45.47		+ 61 56 55.12	9.41	
0 0.03	— 0 33.94	328 59 42.63		+ 69 53 57.96	11.85	
0 0.11	+ 0 32.24	29 42 38.63		+ 9 11 1.96	20.52	
0 0.02	1 11.13	51 40 58.38		— 12 47 17.79		
0 0.10	1 8.89	50 42 22.54		— 11 48 41.95	29.32	
0 0.07	1 5.84	49 42 21.82		— 10 48 41.23		
0 16.18	1 5.85					
0.02	+ 0 25.78	24 30 13.75		+ 14 23 26.84	+29.87	
0.14	— 0 11.15	348 49 2.07	61.04	+ 50 4 38.22	—50.63	S.
0 0.10	+ 0 19.30	18 54 49.00		+ 19 58 51.29	—55.23	
0 0.22	+ 1 15.90	53 14 43.70	61.31	— 14 21 3.14	+10.13	P.
2 52.12	1 15.74	53 10 17.35		— 14 16 36.79	11.19	
2 24.08	+ 1 15.76	53 10 45.41		— 14 17 4.85	+11.44	

NADIR POINTS—READINGS.

	A.	B.	C.	D.	E.	F.	Means.
September 28.							
179° 59′	68″8	63″3	62″8	54″0	50″0	67″8	61″13
	66.2	64.6	62.8	51.4	51.2	65.9	60.35
	67.5	65.6	62.6	54.5	52.5	68.4	61.85
S.	68.2	66.6	64.5	53.0	54.5	69.0	62.63
	68.7	67.8	64.6	55.0	54.2	69.2	63.25
	67.5	66.6	64.3	54.0	53.4	66.9	62.12
Means	67.82	65.75	63.60	53.65	52.65	67.87	61.890
							—.190
September 29.		21*h*.					
179 59	66.9	66.9	65.1	56.0	52.1	68.2	62.53
	67.2	66.9	65.2	55.0	52.3	68.3	62.48
	67.6	67.0	64.9	65.9	51.9	69.1	62.73
C.	66.3	66.9	64.9	54.3	52.1	68.0	62.08
	67.4	66.1	64.9	55.5	51.4	69.1	62.40
	66.8	66.9	65.3	54.9	52.9	68.2	62.50
Means	67.03	66.78	65.05	55.27	52.12	68.48	62.455
							—.192
October 1.		13*h*.					
179 59	71.0	65.1	65.0	54.7	52.2	71.0	63.17
	70.2	66.0	66.0	53.2	54.2	69.5	63.18
	70.2	66.5	65.4	53.8	54.2	69.8	62.42
P.	69.5	65.7	65.4	53.8	52.7	69.3	62.73
	69.8	66.4	65.6	53.8	53.6	69.8	63.17
	69.8	66.0	65.7	53.8	53.3	69.8	63.07
Means	70.08	65.95	65.62	53.85	53.37	69.87	63.122
							—.198
October 1.		20*h*.	15*m*.				
179 59	69.0	64.0	64.9	52.7	51.7	69.3	61.93
	68.5	64.3	65.0	52.7	52.6	68.6	61.95
	68.8	65.0	65.5	52.7	53.0	68.8	62.30
P.	68.8	64.5	65.0	52.7	52.4	68.8	62.03
	68.8	64.5	65.0	52.7	52.7	68.8	62.08
	68.8	65.0	65.0	52.7	52.7	68.8	62.17
Means	68.78	64.55	65.07	52.70	52.52	68.85	62.078
							—.194
October 4.		14*h*.	15*m*.				
179 59	69.0	66.5	66.4	53.7	52.5	69.0	62.85
	68.0	67.6	67.4	53.7	54.5	68.0	63.20
	69.0	67.7	67.0	54.2	54.2	69.0	63.52
P.	68.3	67.2	67.0	54.2	54.2	69.0	63.32
	68.8	68.0	67.0	54.5	57.2	69.0	63.58
	68.0	67.3	66.6	53.5	54.2	68.0	62.93
Means	68.52	67.38	66.90	53.97	53.97	68.67	63.233
							—.192
October 4.		19*h*.	15*m*.				
179 59	67.0	65.5	64.8	53.8	51.2	68.3	61.77
	67.0	66.5	65.0	53.3	52.2	67.7	61.95
	67.0	67.4	65.4	54.6	52.5	68.7	62.60
P.	67.0	66.6	65.3	54.0	52.5	67.3	62.12
	67.2	66.6	65.3	54.4	52.0	68.5	62.33
	67.2	57.4	65.5	54.0	53.0	67.3	62.40
Means	67.07	66.67	65.22	54.02	52.23	67.97	62.194
							—.192

THERMOMETERS.

ADIR POINTS.	Stone.	Upper.	Lower.
	°	°	°
t. 29, No. 1	65.8	62.2	63.3
		63.7	64.0
t. 1, " 1	64.0	72.5	67.0
2	66.0	70.0	68.5
4, " 1	60.3	66.0	63.5
" 2		65.0	62.5

		H.	M.	S.	
7.	App. AR	21	4	4	(8 mag.)
8.	"	21	4	11	(8 ")
22.	"	19	49	53	(8.9 ")
23.	"	19	50	12	(8.9 ")
24. 34, 50.	"	19	52	34	(7 ")
33.	"	19	42	15	
51.	"	19	58	33	(9 ")
52.	"	19	59	56	(9 ")

2 to 4. —0″.04 app. for errors of div'n.
8. Lal. 41100 follows about 5′ N.
9, 10, 19. Through clouds.
23. —4″.26 applied for parallax.
33. —4″.21 " " "
Sept. 27. Nadir Point. App. error of coll'n of the mean of III and V, 1″ East; considerable pa'x to the wires.

* Lieut. Steedman.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M. S.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
Oct. 9	1	Anonymous (Mic.)	5		"	"	"	"	"	"	"	31.447						
	2	61¹ Cygni	4		0 52 68.3	67.0	65.0	53.7	56.0	70.2	63.37		29.784	63.0	56.0		61.0	62.0
	3	61² Cygni (Mic.)	4		"	"	"	"	"	"	"	29.974						
	4	β Aquarii	4		45 6 63.2	61.8	60.5	50.4	49.0	62.7	57.93	30.172	29.784	62.5	55.5			
	5	β Cephei	4		329 0 21.0	18.4	18.6	6.3	9.0	21.5	15.80						61.0	62.0
	6	ε Pegasi	4		29 41 69.6	67.8	67.0	57.7	57.5	70.6	65.03		29.784	62.0	55.2			
	7	α Aquarii	4		39 55 69.8	69.7	66.0	58.3	57.0	72.3	65.52		29.784	61.5	55.6		60.5	61.5
	8	Saturn, S. L.	4		49 42 30.2	29.9	26.5	18.6	21.2	32.2	26.42d		29.784	61.0	55.2		60.0	61.0
	9	Saturn, N. L. (Mic.)	4		"	"	"	"	"	"	"	30.310						
	10	ζ Pegasi	4		28 50 40.0	38.5	37.0	28.2	30.0	41.3	35.83		29.784	61.0	55.2		60.1	61.0
	11	α Piscis Australis	4		69 16 46.2	47.0	46.3	35.8	37.2	50.2	43.78		29.784	60.8	55.0			
	12	γ Cephei	4		322 7 20.5	18.8	19.0	7.2	8.7	20.5	15.78		29.780	59.5	55.0			
	13	γ Pegasi	4		24 32 56.8	55.3	53.2	45.2	42.3	55.0	51.30		29.782	60.0	53.8		58.5	60.5
	14	α Cassiopeæ	4		343 11 49.2	50.2	51.8	36.3	39.1	53.2	46.63		29.784	58.5	54.2		58.0	60.5
	15	ϑ′ Ceti	4		47 50 50.0	49.2	49.2	38.0	38.0	51.6	46.00		29.768	59.0	54.2		58.5	60.0
11	16	α Bootis	4		18 54 37.8	33.0	34.8	24.8	24.4	35.5	31.72		30.028	64.5	64.0	63.0	65.5	64.5
	17	Weisse XIX, 1319	4		53 13 34.4	31.1	28.8	20.8	22.2	35.1	28.73		30.078	63.0	53.9		61.0	61.5
	18	Anonymous	4		53 5 55.1	52.8	50.7	42.1	40.8	56.6	49.68		30.078	62.5	52.7	63.0	58.5	60.5
	19	Weisse XX, 81 (Mic.)	4		"	"	"	"	"	"	"	29.196						
	†20	Neptune	4		51 40 42.5	43.2	40.9	32.2	33.3	45.2	39.55		30.104	59.0	48.3		53.0	56.8
	21	Aquarii, (7740)	4		50 41 14.6	16.1	13.2	4.8	4.3	17.1	11.68				48.1		53.4	56.8
	22	Saturn, S. L.	4		49 44 28.3	29.7	26.7	18.8	20.1	31.5	25.85		30.122	56.5	47.5		51.5	55.8
	23	Saturn, N. L. (Mic.)	4		"	"	"	"	"	"	"	30.302						
15	†24	Weisse XIX, 1319	4		53 13 29.6	29.1	26.4	16.0	19.1	27.0	24.53		30.258	50.8	42.9	53.5	48.2	51.5
	25	Anonymous (Mic.)	4		53 0 22.8	22.1	20.4	11.0	11.3	21.1	18.12	24.765					46.8	50.5
	26	Anonymous "	5		"	"	"	"	"	"	"	29.819						
	27	Anonymous "	6		"	"	"	"	"	"	"	30.648						
	28	Weisse XX, 101 (Mic.)	6		"	"	"	"	"	"	"	30.217						
	29	Anonymous (Mic.)	4		"	"	"	"	"	"	"	31.241	30.258	50.5	41.0			
	30	Neptune	4		51 41 47.3	52.5	49.7	38.5	40.0	49.3	46.18		30.280	47.4	37.9			
	†31	Aquarii, (7740)	4		50 41 9.9	13.2	11.1	0.1	1.1	10.4	7.63		30.282	47.2	38.0	53.3	45.7	46.5
	32	Saturn, S. L.	4		49 47 61.8	65.4	64.1	50.2	53.4	61.2	59.35d		30.284	46.5	36.8		43.6	45.8
	†33	Saturn, N. L. (Mic.)	4		"	"	"	"	"	"	"	30.294						
	34		5	— 9 28.4	307 25 14.8	15.6	16.0	0.4	4.2	11.3	10.38	30.250	30.372	50.2	51.5		52.0	51.5
	35			7 28.4								.280						
	36			5 28.4								.303						
	37			3 28.4								.313						
	38			— 1 28.4								.322						
	39	Polaris, S. P. (Mic.)	4†	+ 0 31.6								.330						
	40			2 31.6								.324						
	41			4 31.6								.310						
	42			6 31.6								.283						
	43			8 31.6								.265						
	44		3	+10 9.6								.230						
16	45	Sun, S. L. (Mic.)	3	— 0 15.0	47 59 65.0	64.8	64.7	49.3	52.7	60.7	59.53	30.685	30.356	51.0	52.0	50.0	52.5	51.5
	46	Sun, N. L.		+ 0 9.0	47 26 69.8	69.3	69.2	55.8	59.0	66.6	64.95d							
	47	Mercury	4		54 58 20.5	21.8	21.3	8.0	14.2	16.5	17.05		30.328	53.0	54.7		55.0	53.0
	48	Weisse, XIX, 1319	4		53 13 28.6	29.6	26.0	18.2	19.0	29.5	25.15		30.238	54.2	49.0	51.0	53.0	53.0
	49	Anonymous (Mic.)	1		52 59 66.0	65.3	62.4	54.7	51.5	65.6	60.92	36.100	30.242	54.0	48.6	51.0	53.0	
	†50	Weisse XX, 268 (Mic. 4)	2		"	"	"	"	"	"	"	41.650						
	51	Weisse XX, 296 (Mic.)	4		"	"	"	"	"	"	"	29.590						
18	52	Sun, S. L. (Mic.)	1	— 0 49.0	48 43 16.9	17.9	12.9	7.0	5.1	17.8	12.93	29.911	30.244	55.5	58.2	52.7	55.6	53.5

DATE.	MICROMETER. Coincid.	Val. 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Oct. 9, 20h.	30.0107	62.750	Saturn	8	0 9.31
11, 14h.	.0153				
11, 22h.	.0152		Saturn	22	8.91
15, 22h.	.0177		Saturn	32	8.59
16, 14h.	.0140		Sun	45	16 6.66

Oct. 11. Error of Runs +0″.54. Temp. of circle 60°; of stone 60°
15. do. — .27 do. 45 do. 53
16. do. + .48 do. 55 do. 55
18. do. .78 do. 57 do. 53

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR nstrument.	Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.	NADIR POINTS—READINGS.	A.	B.	C.	D.	E.	F.	Means
′ ″	′ ″	° ′ ″	″	° ′ ″	″									
− 1 29.98	+ 1 15.80	53 11 39.55	61.31	− 14 17 58.99	+11.97	P.	October 8.	23h.	20m.					
+ 0 0.35	0 0.88	0 53 4.60		+ 38 0 35.96	15.71		179° 59′	66″0	66″1	61″2	54″9	51″8	68″9	61″48
+ 0 2.63	0.88	0 53 6.88		+ 38 0 33.68	15.19			65.0	66.8	62.9	54.0	52.1	67.8	61.43
								55.3	66.1	62.9	54.1	52.1	68.1	61.43
− 0 10.28	+ 0 57.34	45 7 44.99		− 6 14 4.43	22.66		C.	66.0	66.2	63.1	54.3	52.1	68.2	61.65
0.03	− 0 34.34	328 59 41.43		+ 69 53 59.13	11.63			66.0	66.2	63.3	54.1	52.1	68.1	61.63
0.26	+ 0 32.63	29 42 37.40		+ 9 11 3.16	20.49			66.0	66.2	62.8	53.9	52.0	68.4	61.55
							Means	65.72	66.27	62.70	54.22	52.03	68.25	61.530
− 0 0.14	47.83	39 56 53.21		− 1 3 12.65	25.95									—.190
+ 0 0.07	1 6.65	49 43 24.18												
− 0 18.54	1 6.64			− 10 49 43.62										
							October 9.	15h.	20m.					
0.08	0 31.51	28 51 7.26		+ 10 2 33.30	28.00	S.	179 59	67.2	67.2	64.5	53.8	55.0	67.8	62.58
0.21	+ 2 30.09	69 19 13.66		− 30 25 33.10	37.70			66.0	67.3	64.5	50.4	56.6	67.4	62.03
− 0 0.24	− 0 44.50	322 6 31.04		+ 76 47 9.52	33.68			66.5	65.3	63.2	51.5	53.0	66.0	60.92
							S.	65.8	65.0	63.2	51.6	53.5	67.0	60.92
+ 0 0.34	+ 0 26.20	24 33 17.84		+ 14 20 22.72	35.27			65.8	65.8	62.8	52.0	52.4	66.5	60.88
− 0 0.21	− 0 17.32	343 11 29.10		+ 55 42 11.46	37.65			64.5	65.5	63.0	49.8	53.0	64.3	60.02
− 0 0.10	+ 1 3.21	47 51 49.11		− 8 58 8.55	+36.16									
+ 0 0.07	0 19.43	18 54 51.22	62.36	+ 19 58 50.39	−54.91		Means	65.97	66.02	63.53	51.42	53.92	66.50	61.225
− 0 0.11	1 17.32	53 14 45.94	62.76	− 14 21 3.93	+10.14	C.								—.190
− 0 0.08	1 17.16	53 7 6.76		− 14 13 24.75	11.99									
							October 9.	20h.	30m.					
+ 0 51.45	1 17.21	53 7 58.34		− 14 14 16.33	12.23		179 59	67.2	65.8	63.5	53.4	51.1	68.0	61.50
− 0 0.02	1 13.81	51 41 53.34		− 12 48 11.33				66.5	66.4	64.2	52.7	52.3	67.1	61.53
− 0 0.02	1 11.50	50 42 23.16		− 11 48 41.15	29.47			67.4	66.2	63.8	53.5	51.2	67.8	61.65
							P.	66.5	66.2	63.8	53.0	51.8	67.2	61.42
+ 0 0.01	1 8.56	49 45 25.51						66.6	65.4	63.0	53.8	51.0	68.2	61.33
− 0 17.81	1 8.55			− 10 51 43.50				66.2	66.0	63.5	53.8	52.3	67.5	61.55
+ 0 0.05	1 19.59	53 14 44.17	60.89	− 14 21 4.03	10.16		Means	66.73	66.00	62.63	53.37	51.62	67.63	61.497
5 29.50	1 19.45	53 7 7.07		− 14 13 26.93	12.01									—.190
+ 0 12.69	1 19.21	53 1 50.02		− 14 18 9.88	12.16									
− 0 39.02	1 19.19	53 0 58.29		− 14 7 18.15	12.18									
							October 11.	15h.						
11.89	1 19.23	53 1 25.46		− 14 7 45.32	12.31		179 59	69.0	68.5	65.5	55.4	54.2	70.4	63.83
− 1 16.61	1 19.20	53 0 20.71		− 14 6 40.57	12.57			65.5	67.0	63.5	52.1	52.0	67.0	61.18
+ 0 0.12	1 15.94	51 43 2.24		− 12 49 22.10				69.8	68.6	66.0	56.0	53.3	70.5	64.03
0.07	1 13.47	50 42 21.17		− 11 48 41.03	29.59		S.	65.5	65.8	61.5	51.0	51.1	67.5	60.40
+ 0 0.10	1 10.66	49 49 1.52						70.5	69.0	65.5	56.8	54.0	70.2	64.33
− 0 17.07	+ 1 10.65			− 10 55 21.38				65.6	67.1	61.8	53.8	53.0	68.0	61.55
19.30	− 1 16.75	307 23 34.33				P.	Means	67.65	67.67	63.97	54.18	52.93	68.93	62.555
19.42	.75	34.21												—.193
19.52	.74	34.12												
19.23	.74	34.41												
19.28	.73	34.37												
19.69	.73	33.96	60.60	+ 88 29 54.48	41.56		October 11.	19h.	30m.					
19.63	.73	34.02					179 59	67.5	66.8	65.1	55.0	54.1	69.5	63.00
19.48	.72	34.18					C.	69.1	65.8	64.2	54.9	52.3	69.9	62.70
18.94	.72	34.72						68.9	66.1	65.2	55.1	54.0	69.1	63.07
								69.1	66.1	64.9	55.2	52.6	70.5	63.07
19.35	.71	34.32					Means	68.65	66.20	64.85	55.05	53.25	69.75	62.958
18.74	− 1 16.70	34.94												—.196
− 0 42.16	+ 0 58.75	47 44 9.46		− 8 50 29.61			October 15.	1h.						
+ 0 0.26	57.59						179 59	61.3	68.8	65.7	53.5	53.2	61.5	60.67
0.23	1 17.75	54 59 35.03		− 16 5 55.18				63.5	68.4	65.1	54.8	52.0	63.0	61.13
+ 0 0.19	1 18.55	53 14 43.89		− 14 21 4.04	10.19			63.0	69.3	66.0	53.4	53.8	61.9	61.23
							C.	63.2	69.0	65.9	54.2	53.3	62.0	61.27
− 6 23.05	1 17.75	52 54 55.62		− 14 1 16.89	12.88			63.1	68.8	65.9	53.9	53.1	62.2	61.17
−12 13.18	1 17.41	52 49 5.15		− 13 55 25.30	13.43			63.0	68.2	65.1	54.5	52.4	62.6	60.97
+ 0 26.69	1 18.02	53 1 45.63		− 14 8 5.78	13.68		Means	62.85	68.75	65.62	54.05	52.97	62.20	61.072
+ 0 8.45						C.								—.188

THERMOMETERS.

DIR POINTS.	Stone.	Upper	Lower.
	°	°	°
8, No. 1	63.8	62.0	62.0
		63.4	63.0
11, " 2	63.0	64.0	62.8
15, " 1	52.5	43.6	46.0
		47.5	48.2

		H. M. S.	
1.	App. R	20 2 51	(9 mag.)
17, 24, 48.	"	19 52 34	(7 ")
18, 25.	"	20 2 59	(8.9 ")
19.	"	20 4 17	(8.9 ")
21, 31.	"	22 4 11	(7 ")
26.	"	20 3 38	(9.10 ")
27.	"	20 4 5	(9.10 ")
28.	"	20 4 48	(9.10 ")
29.	"	20 6 18	(9.10 ")
49.	"	20 8 0	(7 ")
50.	"	20 11 16	(10 ")
51.	"	20 12 14	(11 ")

20. Poorly defined.
20 to 24, 31 to 33. Very unsteady.
50. Red'n to wire 3, +0s.0332.

DATE. 1847.	No. of ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M. S.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
Oct. 18	1	Sun, S. L. (Mic.)	2	— 0 32.0		"	"	"	"	"	"	29.921						
	2		3	— 0 16.0		"	"	"	"	"	"	.928						
	3			+ 0 13.0	48 10 58.0	57.4	54.0	46.9	44.5	59.1	53.32	29.828			58.9		56.8	53.0
	4	Sun, N. L. (Mic.)		27.0		"	"	"	"	"	"	.810						
	5		6	39.0		"	"	"	"	"	"	.812						
	6		7	+ 0 54.0		"	"	"	"	"	"	.819						
	†7	Mercury, S. L.	4		56 4 53.4	52.9	50.9	41.9	41.1	54.9	49.18		30.200	56.5	59.2	52.8	61.0	55.5
	†8	Mercury, N. L. (Mic.)	4			"	"	"	"	"	"	30.129						
	9	γ Aquilæ	4		28 37 69.8	68.6	65.1	57.0	59.0	70.5	65.00		30.150	61.8	59.6		59.8	57.4
	10	β Aquilæ	4		32 50 62.8	62.1	58.5	49.9	49.6	64.0	57.82				59.1	54.0	59.5	57.5
	11	Anonymous (Mic.)	2		52 57 34.6	32.0	28.6	21.0	23.8	34.0	29.00d	27.805	30.156	61.8	59.0		61.5	57.7
	12	Weisse XX, 101 "	5			"	"	"	"	"	"	26.512						
	†13	Anonymous "	4			"	"	"	"	"	"	33.120						
	14	Weisse XX, 296 "	4			"	"	"	"	"	"	27.172	30.154	61.5	59.7			
	15	Neptune	4		51 42 41.1	40.3	37.5	28.0	31.2	43.3	36.90d		30.152	60.5	57.0	54.5	59.5	56.8
	16	Saturn, N. L.	4		49 49 71.0	70.0	67.1	58.9	59.1	72.5	66.43		30.144	59.8	55.5		58.5	56.8
	17	Saturn, S. L. (Mic.)	4			"	"	"	"	"	"	29.775						
	18	Mars, N. L.	4		25 19 65.0	64.3	60.9	50.1	50.5	63.7	59.08		30.098	57.0	51.9	55.0	55.6	55.5
	19	Mars, S. L. (Mic.)	4			"	"	"	"	"	"	29.695						
	20	Venus, S. L.	4		44 31 61.5	61.3	59.5	48.3	48.6	60.2	56.57		30.084	53.0	60.0	56.0	60.0	57.5
19	21	Sun, N. L.	5	+0 15.0	48 32 55.0	57.2	51.3	41.8	44.2	56.7	51.03		30.060	60.2	64.0		63.0	58.5
20	†22	Sun, S. L. (Mic. 2)	3	—0 17.0	49 16 46.0	47.8	46.0	33.8	36.8	45.5	42.65	20.424	30.230	60.0	59.3		64.5	60.0
	23	Sun, N. L.	7	+0 52.0	48 54 31.8	34.0	30.0	20.0	23.8	36.5	29.35							
	24	α Piscis Australis	4		69 16 44.6	47.6	46.2	37.6	44.0	47.0	44.50		30.250	56.2	45.8			
	25	γ Cephei	4		322 7 19.0	18.2	18.3	10.0	6.2	20.0	15.28		30.262	55.2	45.2			55.0
	26	γ Pegasi	4		24 32 55.2	55.2	55.2	44.6	41.8	55.8	51.30		30.266	55.5	45.0		55.5	54.0
	27	α Cassiopeiæ	4		343 11 48.0	47.3	47.9	36.0	36.9	51.0	44.52		30.262	55.0	44.8			55.0
	28	Mars, N. L.	4		25 25 34.0	38.0	35.0	23.5	25.0	33.2	31.45		30.256	50.8	41.5		51.0	52.0
	29	Mars, S. L. (Mic.)	4			"	"	"	"	"	"	29.672						
	†30	Venus, S. L.	4		43 57 50.0	52.4	50.4	38.0	38.8	52.1	46.95d		30.342	53.0	62.8	57.0	56.3	54.8
	†31	Venus, N. L. (Mic.)	4			"	"	"	"	"	"	30.902						
21	32	α Cephei	4		336 56 75.4	73.6	74.7	58.0	64.6	74.7	70.17d		30.262	58.8	53.9		57.8	57.3
	33	β Cephei	4		329 0 23.3	21.3	22.8	7.1	13.1	21.4	18.17		30.262	58.8	53.5	57.3	57.5	57.2
	34	ε Pegasi	4		29 41 72.0	70.0	70.7	57.2	61.7	70.7	67.05d		30.256	58.2	52.8		57.2	56.8
	35	Neptune	4		51 43 21.1	19.9	17.9	6.0	10.8	20.7	16.07		30.242	58.0	53.8		56.5	56.8
	†36	α Piscis Australis	4		69 16 48.6	49.5	50.8	37.2	40.2	51.1	46.23		30.242	57.5	51.1		57.2	57.6
	37	α Pegasi	4		24 29 53.4	51.5	52.0	37.9	41.2	51.1	47.85		30.242	57.5	50.8		56.5	56.8
	38	γ Cephei	4†	+ 0 20.0	322 7 20.4	18.9	19.0	5.9	9.1	20.5	15.63d		30.238	36.9	49.5		55.0	55.0
	†39	α Andromedæ	4		10 38 23.8	23.9	22.0	11.7	14.5	24.1	20.00		30.224	56.2	48.5		53.2	54.7
	40	Moon, S. L. (Mic.)	5†	18.2	36 20 39.6	39.2	40.1	27.5	30.1	41.7	36.37		30.226	55.6	48.2		53.7	54.8
	41		6	31.7		"	"	"	"	"	"	30.105						
	42		7	+ 0 45.1		"	"	"	"	"	"	.132						
	†43		1	— 1 22.0	196 48 53.1	53.8	51.1	39.9	39.9	53.9	48.62	30.406	30.212	55.2	49.8		53.7	55.0
	44		2	0 55.0		"	"	"	"	"	"	.422						
	45	α Cassiopeiæ, Ref. (Mic.)	3	0 27.0		"	"	"	"	"	"	.445						
	46		4	— 0 1.0		"	"	"	"	"	"	.461						
	47	α Cassiopeiæ, (Mic.)	6	+ 0 55.0	343 11 53.0	52.0	52.4	36.8	41.7	54.2	48.35d	30.118					55.3	55.5
	†48		7	+ 1 22.0		"	"	"	"	"	"	.136						
	†49		3	—10 6.8	310 24 56.1	55.9	56.5	40.2	44.1	56.0	51.47		30.216	55.0	48.6	57.0	55.5	55.3
	50	(Mic.)		6 49.8								30.002						
	51	Polaris (Mic.)		6 29.8								.001						
	†52	"		— 6 9.8								.005						

DATE.	MICROMETER. Coincid.	Val. 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Oct. 18, 15h.	30.0482	62.750	Sun	1	16 7.24
			Mercury	7	0 2.53
23h.	.0471		Saturn	16	8.52
			Mars	18	11.05
20, 14h.	.0564		Sun	22	16 9.84
3h.	.0543		Mars	28	0 12.02
			Venus	30	27.41
21, 15h.	.0421				

Oct. 19. 20. 21. Error of Runs +0″.48. .58 Temp. of circle and stone 55° do. do. do. 57

Oct. 18, 16h. The fixed hor. wire evidently moved since the 16th; removed from it several loose fibres.

RRECTIONS FOR ument.	Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850 0	Observers.	NADIR POINTS—READINGS.	A.	B.	C.	D.	E.	F.	Means.
″	′ ″	° ′ ″	″	° ′ ″	″									
7.99	+ 0 59.30					C.	October 16.		20h.	30m.				
7.68		48 28 13.03	63.75	— 9 34 30.03			179° 59′	64″5	65″8	63″7	53″8	50″2	64″6	60″43
13.71								63.8	67.0	64.3	53.8	52.7	63.8	60.90
14.82	58.03							64.6	66.0	63.5	53.8	50.6	65.0	60.58
14.63							P.	64.6	67.4	64.3	53.8	52.0	65.0	61.18
14.15								64.6	66.0	63.5	53.8	50.7	65.3	60.65
								64.2	67.0	64.2	53.8	51.8	64.7	60.95
0.03	1 20.02						Means	64.38	66.53	63.92	53.80	51.33	64.73	60.783
4.96	1 19.94	56 6 6.70		— 17 12 23.70										—.187
0.36	0 31.35	28 38 36.71	62.45	+ 10 15 4.99	— 0.45									
							October 18.		14h.					
0.15	37.11	32 51 34.78		+ 6 2 6.92	+ 1.48		179 59	68.7	69.1	65.9	56.5	52.5	68.9	63.60
19.95	1 16.16	53 1 5.11		— 14 7 23.41	12.33			68.9	69.5	66.3	56.8	53.0	69.1	63.93
42.29	1 16.19	53 2 27.44		— 14 8 45.74	12.46			68.7	70.1	66.8	56.9	53.5	68.7	64.12
12.70	1 15.85	52 55 32.15		— 14 1 50.45	12.99		C.	69.1	69.8	66.3	57.2	52.9	69.7	64.17
0.57	1 16.09	53 1 45.66		— 14 8 3.96	13.80			68.2	70.1	66.3	57.0	54.0	68.8	64.07
0.05	1 12.76	51 43 49.71		— 12 50 8.01				68.1	69.5	65.8	57.5	53.1	68.9	63.82
0.02	1 7.76						Means	68.62	69.68	66.23	56.98	53.17	69.02	63.950
17.02	1 7.76	45 51 22.69		— 10 57 40.99										—.196
0.00	0 19.56													
22.10	19.57	25 20 29.70		+ 13 33 12.00										
							October 18.		3h.					
0.21	10.22	44 32 6.58	63.52	— 5 38 23.81		P.	179 59	66.9	67.2	64.2	55.3	53.1	68.1	62.47
0.46	17 3.20	48 49 54.69		— 9 56 11.92				66.6	67.9	64.0	55.5	53.8	67.5	62.55
								67.1	67.9	64.5	55.4	53.8	67.8	62.75
5.14	1 0.73						C.	66.4	68.2	64.9	55.1	53.9	67.7	62.70
0.02	0 59.52	49 11 38.68	64.49	— 10 17 54.84		S.		66.3	67.9	64.2	55.1	53.9	67.5	62.48
0.12	+ 2 35.29	69 19 19.67	63.71	— 30 25 36.71	39.23			67.1	68.1	65.0	55.2	54.3	67.7	62.90
0.14	— 0 46.12	322 6 29.02		+ 76 47 13.94	29.95		Means	66.73	67.87	64.47	55.27	53.80	67.72	62.642
0.21	+ 0 27.10	24 33 18.61		+ 14 20 24.35	34.43									—.690
0.11	— 0 17.93	343 11 26.48		+ 55 42 16.48	34.41									
0.03							October 19.		14h.					
24.00	+ 0 20.36	25 26 3.80		+ 13 27 39.16			179 59	68.5	67.5	65.5	55.0	54.0	68.5	63.17
0.04	37.78							68.4	69.5	66.4	55.4	55.8	68.3	63.97
		43 57 57.36	64.06	— 5 4 14.05		C.		68.6	68.2	66.4	56.0	55.2	68.6	63.83
53.97	+ 0 36.97						P.	68.3	67·8	65.7	56.0	55.2	68.6	63.60
0.11	— 0 24.80	336 56 45.48	64.32	+ 61 56 58.09	7.36			88.3	69.0	66.3	56.0	55.3	69.0	63.98
0.04	— 0 35.02	328 59 43.11		+ 69 54 0.46	9.34			68.0	68.3	66.5	56.0	55.3	68.2	63.72
0.06	+ 0 33.31	29 42 40.42		+ 9 11 3.15	20.29		Means	68.35	68.38	66.13	55.73	55.13	68.53	63.711
0.23	1 13.48	51 44 29.78		— 12 50 46.21										—.194
0.17	2 33.61	69 19 19.67		— 30 25 36.10	39.41									
0.02	+ 0 26.71	24 30 14.58		+ 14 23 28.99	29.08		October 20.		14h.					
0.24	— 0 45.77	322 6 30.10		+ 76 47 13.47	29.67		179 59	70.4	69.3	69.0	53.3	55.3	71.8	64.85
0.07	+ 0 11.05	10 38 31.12		+ 28 15 12.45	32.33			69.0	69.8	67.5	52.3	56.8	68.9	64.05
4.04								71.4	71.8	69.4	55.8	58.2	71.8	66.40
3.43	—53 30.61	37 27 9.85		+ 1 26 33.72			S.	68.5	68.8	67.6	52.8	56.8	68.2	63.78
4.81								70.0	70.0	68.6	55.2	56.4	71.5	65.28
								67.8	70.2	67.0	52.8	56.9	68.0	63.78
24.90							Means	69.52	69.98	68.18	53.70	56.73	70.03	64.690
24.68														—.198
25.23	+ 0 17.72	196 48 41.20		+ 55 42 16.13										
25.74					+34.19		October 20.		Night.					
2.99							179 59	66.8	67.6	66.0	55.2	52.5	68.2	62.72
2.82	— 0 17.72	343 11 27.73		15.84				66.5	68.2	66.8	55.8	54.0	67.8	63.18
								67.6	68.9	67.8	57.2	53.0	69.0	63.92
5.23	— 1 8.99	310 23 47.71					S.	69.8	69.2	67.8	57.6	56.0	69.5	64.98
4.93	.95	47.45						68.9	69.4	67.8	56.8	56.0	69.4	64.72
								67.8	68.9	66.8	55.5	54.5	69.8	63.88
4.79	.95	47.31					Means	67.90	68.70	67.17	56.35	54.33	68.95	63.900
4.32	.95	46.84												—.192

THERMOMETERS.

OINTS.	Stone.	Upper.	Lower.
	°	°	°
No. 1	51.0	53.0	52.5
" 1	52.8	58.0	54.3
		59.2	54.5
" 2	55.0	55.8	55.8
		57.5	56.4
" 1		64.0	59.5

		H.	M.	S.	
11.	App. AR	20	4	5	(9.10 mag.)
12.		20	4	49	(9.10 ")
13.		20	8	4	(9.10 ")
14.		20	12	15	(8 ")

7, 8, 30, 31, 36, 39. Very unsteady.
7. +0″.08 applied for def. illumination.
13. Obs. very doubtful.
22. Red. to wire 3 —0r.0170.
31. —0″.78 applied for def. illumination.
36. Through fog.
39. +0″.18 applied for errors of division.
43 to 48. Zenith Point by obs. of α Cass. 64″.46. East end of axis low 4″.1.
49 to 52. —0″.04 applied for errors of division.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M. S.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
Oct. 21	†1	(Mic.)		— 5 49.8								29.999						
	2	"		5 29.8								.987						
	3	Polaris		4 44.8	310 24 61.8	60.7	61.1	46.0	48.8	61.1	56.58	. .						
	†4	Polaris		— 0 44.8	61.4	61.4	61.0	45.9	49.0	60.9	56.60	. .			49.2		55.5	54.7
	5	Polaris		+ 3 34.2	61.1	60.5	60.2	44.7	48.0	60.0	55.75	. .						
	6	(Mic.)		5 50.2								30.058						
	7	"		6 10.2								.072						
	8	"		6 30.2								.062						
	9	"		6 55.2								.073						
	10	"		7 15.2								.070						
	†11	Polaris	5	+ 9 30.2	57.8	57.4	56.8	42.1	44.9	57.8	52.40	. .	30.214	54.5	48.7		55.4	54.2
	12	Arietis, 683	4	. . .	24 19 30.6	29.4	27.5	17.6	20.4	28.1	25.60	. .	30.216	54.0	48.2		53.7	53.7
	13	Weisse II, 214	4	. . .	26 24 14.8	15.3	12.9	2.1	2.9	14.0	10.33	. .	30.214	54.0	48.3		53.0	54.0
	14	Arietis, 798	4	. . .	27 5 71.0	71.5	69.9	59.0	59.6	70.1	66.85	. .	30.216	54.0	48.3		53.7	54.0
	15	Mars, S. L.	4	. . .	25 28 55.6	56.2	53.5	42.2	42.1	55.0	50.77	. .	30.208	54.0	48.3		53.7	54.2
	16	Mars, N. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	30.412						
	17	Weisse II, 789	4	. . .	25 17 40.8	41.4	40.1	27.8	30.3	39.5	36.65	. .	30.194	54.0	48.2		53.8	54.5
	†18	Venus, N. L.	4	. . .	43 41 19.3	20.3	17.0	7.5	10.0	20.0	15.68	. .	30.136	60.0	61.4		61.0	60.5
	19	Venus, S. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	29.164						
25	20	Venus, S. L.	4	. . .	42 49 61.2	64.3	60.2	51.2	49.7	63.7	58.38	. .	30.366	50.2	45.0	59.0	53.0	52.5
	†21	Venus, N. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	30.917						
26	22	Sun, N. L. (Mic.)	3	— 0 16.0	51 2 33.2	35.7	35.2	22.1	26.7	34.1	31.18	31.562	30.382	51.0	48.0		54.5	54.5
	23	Sun, S. L.	5	+ 0 16.0	51 33 15.3	18.8	14.8	4.3	6.8	15.6	12.60	. .						
	24	Weisse XX, 268 (Mic.)	3	. . .	52 43 64.5	63.8	64.4	48.7	52.5	62.4	59.38	26.463	30.426	54.5	43.0	57.0	50.0	52.0
	25	Weisse XX, 284 "	5	. . .	"	"	"	"	"	"	"	32.193						
	†26	Iris, "	2	. . .	"	"	"	"	"	"	"	31.635						
	27	Weisse XX, 387 "	4	. . .	"	"	"	"	"	"	"	29.020						
	28	Neptune	4	. . .	51 43 68.3	69.0	68.2	54.0	58.0	67.0	64.08	. .	30.458	51.0	40.4		46.5	50.0
	29	Saturn, S. L.	4	. . .	49 54 58.4	61.0	61.0	45.5	49.0	58.2	55.52	. .	30.468	49.5	39.0		45.0	49.0
	30	Saturn, N. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	30.367						
	31	β Ceti	4	. . .	57 41 26.8	31.4	32.4	17.3	23.6	26.7	26.37	. .	30.490	46.0	36.8		42.5	47.0
	32	Uranus	4	. . .	33 22 39.7	45.4	44.9	29.4	35.1	38.8	38.88	. .	30.496	45.3	36.2	55.5	42.0	46.5
	33	ϑ^1 Ceti	4	. . .	47 50 45.5	49.5	50.3	34.0	40.2	44.2	43.97	. .	30.500	45.0	36.0		41.5	46.5
	†34	Mars, S. L.	4	. . .	25 44 36.3	43.2	42.2	23.5	31.6	32.8	34.93	. .	30.502	44.0	35.9		40.5	45.0
	†35	Mars, N. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	30.443						
27	36	Anonymous	5	. . .	52 41 41.2	42.6	45.6	28.1	35.1	39.0	38.60	36.414	30.554	47.0	40.5	50.2	54.0	47.3
	37	Anonymous "	4	. . .	"	"	"	"	"	"	"	31.438						
	†38	Weisse XX 387 "	6	. . .	"	"	"	"	"	"	"	26.771	30.554	46.8	40.0			
	39	Neptune	4	. . .	51 44 15.1	17.3	17 1	1.1	8.9	10.5	11.67	. .	30.556	44.0	36.5	50.0	41.5	48.3
	†40	Saturn, N. L.	4	. . .	49 54 62.9	67.5	68.9	50.5	57.3	60.8	61.32	. .	30.568	43.5	35.5			49.9
	41	Saturn, S. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	29.761						
	42	α Pegasi	4	. . .	24 29 47.8	51.6	52.3	35.0	40.9	43.5	45.18	. .	30.578	43.0	35.0		40.7	44.9
	43	γ Cephei	4	. . .	322 7 17.4	19.3	20.3	4.5	10.2	14.4	14.35	. .	30.588	43.8	34.0	49.3	45.0	46.0
	†44	α Cassiopeiæ	4	. . .	343 11 45.5	48.1	51.0	31.5	39.1	43.9	43.18	. .	30.592	42.5	32.9	44.5	45.5	
	†45	Polaris	3	—10 23.0	310 24 56.6	61.2	62.2	42.1	50.2	53.8	54.35	. .	30.585	42.0	32.9		40.0	41.5
	46	(Mic.)		5 54.0								30.012						
	47	"		5 34.0								30.009						
	48	"		5 14.0								30.006						
	49	"		4 54.0								30.004						
	50	"		4 34.0								30.003						
	51			3 45.0														
	†52	Polaris	4	— 0 14.0	59.9	65.3	65.3	45.9	53.9	57.4	57.95	. .			33.0		39.3	40.3

DATE.	MICROMETER. Coincid.	Val. 1r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Oct. 21, 1h.	30.0460	62.750	Mars .	15	0 11.68
12h.	.0478		Venus .	18	28.23
25, 12h.	.0453		Venus .	20	27.96
26,			Sun .	22	16 9.07
			Saturn .	29	9.89
			Mars .	34	12.40
27, 20h.	.0475		Saturn .	40	8.98

Oct. 26. Error of Runs +0″.13. Temp. of circle 50°; of stone 57°
27. do. — .02 do. 45 do. 50

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR		Corrected Readings.	Zenith Point.	Apparent Declinations.	Reduction to	Observers.	NADIR POINTS—READINGS.						
Instrument.	Objects.		359° 59′		1850.0			A.	B.	C.	D.	E.	F.	Means.
′ ″	′ ″	° ′ ″	″	° ′ ″	″									
							October 21.		15h.					
0 4.49	−1 8.95	310 23 47.01				C.	179° 59′	68″6	69″4	69″1	55″1	56″1	67″8	64″35
5.06	.95	47.58						68.9	68.6	68.9	55.9	55.3	68.9	64.42
1.13	.94	48.77					C.	68.1	68.9	69.9	55.1	55.8	67.8	64.27
0.00	.93	47.67	64.32	+ 88 29 55.69	+39.42			88.6	68.6	68.4	55.5	54.3	68.6	64.00
0.63	.93	47.45					Means	68.55	68.88	69.07	55.40	55.38	68.27	64.258
1.19	.95	47.99												−.195
0.52	.95	47.32					October 21.		22h.	30m.				
1.39	.95	48.19					179 59	69.9	68.4	68.7	55.9	56.6	70.1	64.93
0.76	.95	47.56						69.6	69.4	68.9	55.0	57.3	68.3	64.75
1.18	.95	47.98						66.4	68.1	68.1	55.1	55.6	69.1	64.23
4.62	−1 8.98	48.04					C.	69.5	68.2	67.9	55.0	55.3	69.1	64.17
0.04	+0 26.61	24 19 52.25		+ 14 33 51.32	34.90			68.6	69.3	69.1	55.1	57.5	68.7	64.72
								68.4	69.1	68.8	54.8	57.4	67.2	64.28
0 0.06	29.22	26 24 39.61		+ 12 29 3.96	34.37		Means	69.23	68.75	68.58	55.15	56.62	68.75	64.514
0 0.08	30.12	27 6 36.89		+ 11 47 6.68	33.46									−.194
0 0.11	19.97	25 28 59.17		+ 13 24 44.40										
0 23.25							October 22.		15h.					
0 0.06	27.80	25 18 4.51		+ 13 35 39.06	32.37		179 59	70.2	70.1	65.5	57.0	55.9	71.5	65.03
0 0.12	35.38	43 42 19.17	63.26	− 4 48 36.26				68.0	69.2	64.4	59.2	55.2	68.8	64.13
0 55.44	36.28					S.		67.8	68.2	64.4	56.2	54.1	70.0	63.45
0.00	38.10	42 50 8.52	63.93	− 3 56 25.34		P.	S.	65.6	67.8	62.4	53.0	53.5	67.0	61.55
0 54.75	36.92							68.0	69.2	63.0	55.5	55.2	69.4	63.38
1 35.10	1 6.39	51 18 11.54		− 12 24 28.36				66.5	69.6	54.2	55.0	55.6	68.2	63.18
0 0.26	1 7.75						Means	67.68	69.02	63.97	55.98	54.92	69.15	63.453
3 44.61	1 18.75	52 49 2.74	63.14	− 13 55 20.35	13.86									−.195
2 14.35	1 18.47	52 43 3.50		− 13 49 21.11	13.94		October 26.		14h.	30m.				
1 39.66	1 14.79	52 43 34.55		− 13 49 52.16			179 59	67.2	70.0	68.7	56.2	55.0	67.4	64.08
1 4.36	1 18.64	52 46 22.38		− 13 52 39.99	14.63			66.7	71.0	68.7	55.4	56.3	66.3	64.07
0 0.04	1 16.08	51 45 20.20		− 12 51 37.81				66.7	70.7	68.7	56.0	56.2	66.4	64.12
0.00	1 11.05	49 55 56.78		− 11 2 14.39			P.	66.7	70.7	68.7	56.0	56.2	66.4	64.12
0 19.57	1 11.04							66.7	70.7	68.7	56.0	56.2	66.4	64.12
0 0.05	1 35.92	57 43 2.34		− 18 49 19.95	40.60			67.0	70.7	68.7	56.0	56.2	66.7	64.22
0.07	0 39.87	33 23 18.82		+ 5 30 23.57			Means	66.83	70.63	68.70	55.93	56.02	66.60	64.119
0 0.02	1 7.24	47 51 51.23		− 8 58 8.84	37.57									−.193
0 0.02	0 21.28	25 44 43.79		+ 13 8 58.59			October 26.		20h.	40m.				
0 24.81	0 21.27						179 59	67.2	68.5	69.0	55.5	53.5	66.8	63.42
6 38.96	1 18.93	52 36 18.57	63.27	− 13 42 36.05	14.33	C.		66.4	63.0	69.0	54.6	54.8	66.0	63.30
1 27.07	1 19.22	52 41 30.75		− 13 47 48.23	14.56		P.	66.4	69.0	69.0	54.6	54.8	66.0	63.30
3 26.23	1 19.49	52 46 24.32		− 13 52 41.80	14.63			66.4	69.0	69.0	54.6	54.8	66.0	63.30
0 0.02	1 16.99	51 45 28.64		− 12 51 46.12			Means	66.60	68.87	69.00	54.82	54.48	66.20	63.330
0.00	1 11.84	49 56 22.14		− 11 2 39.62										−.192
0 17.94	1 11.85						October 27.		23h.	20m.				
0 0.01	+0 27.90	24 30 13.07		+ 14 23 29.45	28.82		179 59	65.1	69.9	69.9	54.0	56.3	62.5	62.95
0 0.07	−0 47.72	322 6 26.70		+ 76 47 15.82	27.85			65.5	70.9	70.9	54.2	57.8	62.9	63.70
0.03	17.86	343 11 25.35		+ 55 42 17.17	32.61		C.	65.6	70.6	70.8	54.2	57.7	62.3	63.53
0 5.49	1 12.15	310 23 47.69						65.2	70.4	70.5	53.5	57.2	62.2	63.17
3.97	.15	46.17					Means	65.35	70.45	70.52	53.98	57.25	62.47	63.338
3.96	.15	46.16												−.187
3.96	.15	46.16					October 27.		23h.	40m.				
3.93	.15	46.13					179 59	65.6	61.1	70.9	54.1	58.7	62.1	63.75
3.81	.15	46.01						65.4	61.1	70.8	54.1	58.1	62.0	63.58
0 0.68	.14	46.57					C.	64.7	60.9	70.9	53.4	58.8	61.8	63.42
0 0.03	.14	45.78		+ 88 29 56.30	+37.21			65.9	60.3	70.0	54.6	57.5	63.0	63.55
							Means	65.40	70.85	70.65	54.05	58.28	62.22	63.575
														−.187

THERMOMETERS.

R POINTS.	Stone.	Upper.	Lower.
	°	°	°
21, No. 1	56.5	60.0	57.0
" 2	57.3	56.8	56.8
		58.0	57.0
26, " 1	52.0	56.0	55.0
" 2	57.0	52.0	52.0
27, " 1	49.3	42.0	44.0
" 2	49.3	46.0	45.4

		H. M. S.	
12.	App. R.	2 4 47	(6 mag.)
13.	"	2 13 59	(9 ")
14.	"	2 28 21	(6 ")
24.	"	20 11 16	
25.	"	20 11 58	
26.	"	20 14 32	
27, 38.	"	20 15 38	(7, 8 mag.)
36.	"	20 14 13	
37.	"	20 15 21	

1 to 11, 45 to 52. −0″.04 applied for errors of division.
4. 45s. before passing IV.
18. −0″.88 applied for defective illumination.
21. −1″.15 do. do.
26. −3″.71 applied for parallax.
38. Two obs. with mic. reduced to the meridian.
40 to 44. Very unsteady.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means.	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo
			No.	M. S.	° ′ ″	″	″	″	″	″	″	Revs.	In	°	°	°	°	°
Oct. 27	†1	Polaris . . . (Mic.)		+ 3 36.0	310 24 59.8	65.1	64.9	45.9	52.7	56.9	57.55	. .						
	2	"		6 16.0								30.074						
	3	"		6 36.0								.077						
	4	"		7 6.0								.084						
	5	"		7 26.0								.082						
	6	"		7 51.0								.088						
	†7		5	+ 9 12.0		56.6	61.8	62.1	41.8	49.9	53.9	54.35	. .	30.586	41.0	33.0		39.5	41.0
28	8	Sun, S. L. (Mic.) . .	3	— 0 16.5	52 14 64.6	67.3	69.5	50.4	59.2	60.8	61.97	31.120	30.730	43.8	42.0	46.5		
	9	Sun, N. L.	5	+ 0 16.5	51 41 37.3	40.3	43.2	24.4	34.7	33.0	35.48	. .					47.0	47.0
	10	Weisse XX, 145 (Mic.) .	3	. . .	52 40 62.8	65.3	67.0	46.3	56.8	57.7	59.32	28.440	30.710	46.8	38.8	46.5	45.5	46.0
	11	Weisse XX, 284 " .	3	. . .	"	"	"	"	"	"	"	29.323						
	12	Anonymous " .	4	. . .	"	"	"	"	"	"	"	35.815						
	13	Weisse XX, 359 " .	7	. . .	"	"	"	"	"	"	"	36.785						
	†14	Iris " .	4	. . .	"	"	"	"	"	"	"	34.030						
	15	Weisse XX, 498 " .	3	. . .	"	"	"	"	"	"	"	39.193						
	16	Weisse XX, 499 " .	6	. . .	"	"	"	"	"	"	"	39.312						
Nov. 2	17	Sun, N. L (Mic.) . .	3	— 0 14.0	53 19 66.0	67.5	65.5	50.0	57.7	63.0	61.62	30.435	30.101	59.2	63.0	54.0	61.5	57.0
	18	Sun, S. L.	5	+ 0 18.0	53 51 61.8	63.4	62.0	48.0	55.0	59.8	58.33	. .					61.0	57.5
	19	Mercury	4	. . .	62 13 39.0	40.6	38.4	25.4	33.0	39.0	35.90	. .	30.070	60.0	66.0		62.0	57.0
	20	Weisse XX, 545 . . .	4	. . .	52 24 16.0	15.5	13.5	3.7	5.6	17.0	11.88	. .						
	†21	Iris, (Mic.)	3	. . .	"	"	"	"	"	"	"	32.996	30.046	60.6	61.2	55.0	63.0	59.0
	†22		2	—20 10.5	310 24 32.6	33.8	31.5	19.8	24.9	34.5	29.52	. .	30.036	57.0	49.2			
	23		3	10 19.5		47.0	48.0	47.4	32.8	38.8	49.5	43.92	. .					
	24	Polaris	4	— 0 11.5		52.6	54.8	52.8	41.5	43.3	54.5	49.97	. .	30.028	56.0	49.8		
	25		5	+ 9 10.5		48.4	50.0	47.0	34.0	38.2	49.8	44.57	. .					
	†26		6	+18 58.5		34.8	34.5	31.8	21.0	26 3	35.0	30.57	. .	30.030	56.0	50.0		
	27	α Arietis	4	. . .	16 8 59.8	61.6	59.5	47.8	49.8	62.0	56.75	. .	30.022	55.7	49.0			
3	28	Weisse XX 545 . . .	4	. . .	52 24 18.4	14.1	12.7	5.9	4.1	20.2	12.57	. .	29.868	64.0	61.4	57.0	59.4	60.5
	†29	α Andromedæ	4	. . .	10 38 22.7	22.2	17.1	10.6	13.6	24.8	18.50	. .	29.864	61.0	53.9		59.8	58.3
	30	α Cassiopeiæ	4	. . .	343 11 43.9	42.5	42.2	30.3	35.0	47.3	40.20	. .	29.856	60.5	53.0		59.0	58.0
	†31		3†	— 9 10.4	310 24 49.9	48.9	47.8	34.7	39.1	52.2	45.43	. .	29.850	59.5	53.6	57.0	59.1	57.7
	32	(Mic.)		4 35.4								30.008						
	33	"		4 15.4								29.998						
	34	Polaris . . . "		3 55.4								30.002						
	35	"		3 35.4								30.004						
	36	"		3 15.4								29.988						
	†37		4	— 0 3.4		54.4	52.7	51.2	39.1	42.2	56.2	49.30	. .			53.9		59.0	57.7
5	38	Neptune	4	. . .	51 44 66.0	64.3	63.8	52.3	51.2	67.0	60.77	. .	30.044	59.2	50.0	61.0	54.0	56.0
	39	Saturn, S. L. . . .	4	. . .	49 57 21.1	19.7	19.3	9.0	8.3	22.3	16.62	. .	30.060	57.2	49.0		53.5	55.5
	†40	Saturn, N. L. (Mic.) .	4	. . .	"	"	"	"	"	"	"	30.354						
	41	α Piscis Australis . . .	4	. . .	69 16 49.7	51.0	53.0	41.0	39.4	53.2	47.88	. .	30.068	57.0	48.6		53.0	55.5
	42	α Pegasi	4	. . .	24 29 52.3	50.5	50.8	38.4	37.8	52.3	47.02	. .	30.072	56.5	48.2		52.5	55.5
	43	ι Piscium	4	. . .	34 4 50.6	50.6	51.4	37.5	37.2	52.6	46.65	. .	30.078	55.2	47.3		52.0	55.0
	†44	α Andromedæ	4	. . .	10 38 23.5	21.2	21.9	11.6	13.6	23.8	19.77	. .	30.082	54.8	47.2		52.5	54.0
	45	α Cassiopeiæ	4	. . .	343 11 44.8	46.0	48.0	33.2	36.0	48.0	42.70	. .	30.082	53.5	46.5		53.5	54.5
	†46		2	—20 13.0	310 24 34.4	37.0	36.0	23.8	25.3	35.6	32.02	. .	30.084	53.0	46.2			
	47		3	10 21.0		50.0	53.4	53.0	37.2	40.0	51.9	47.58	. .					
	48	Polaris	4	— 0 13.0		53.5	56.8	56.0	42.6	43.2	56.6	51.45	. .	30.086	52.9	46.0		
	49		5	+ 9 16.0		49.6	52.2	50.3	38.0	37.5	52.3	46.65	. .					
	†50		6	+18 57.0		36.8	39.0	38.2	26.0	26.7	38.9	34.27	. .	30.088	52.3	46.0		
	51	α Arietis	4	. . .	16 8 59.5	62.4	62.5	47.1	48.2	59.8	56.58	. .	30.085	51.0	45.6			
	52	α Persei	4	. . .	345 34 66.2	69.0	71.0	57.0	57.2	65.8	64.36	. .	30.084	50.5	44.1		51.0	52.0

DATE.	MICROMETER. Coincid.	Val. 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Oct. 28, 15h.	30.0455	62.750	Sun .	8	16 10.26
Nov. 2, 15h.	.0438		Sun .	17	16 11.23
3, 1h.	.0497				
5,			Saturn	39	0 9.45

Oct. 26. / Nov. 2. / 3. / 5. } Error of Runs +0″.52. Temp. of circle 55°; of stone 55°

do. .13 do. 53 do. 61

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR Instrument.	Objects.	Corrected Readings.	Zenith Point.	Apparent Declinations.	Reduction to	Observers.	NADIR POINTS—READINGS.	A.	B.	C.	D.	E.	F.	Means.
″	′ ″	° ′ ″	359° 59′	° ′ ″	1850.0									
0 0.62	−1 12.14	310 23 46.03				C.	October 28.	15h.						
0.36	.14	45.77					179° 59′	66″2	70″0	71″5	52″0	60″0	60″8	63″42
0.40	.14	45.81						66.2	70.4	71.7	51.3	60.3	60.5	63.40
0.31	.14	45.72					P.	66.3	70.2	71.7	52.0	60.3	61.0	63.58
0.69	.14	46.10						66.0	70.4	71.7	52.0	60.3	61.0	63.57
0.65	.14	46.06					Means	66.18	70.25	71.65	51.82	60.22	60.83	63.492
														−.193
0 4.30	−1 12.14	46.50												
1 7.45	+1 11.37	51 58 55.63	63.30	− 13 5 13.08		P.	October 28.	20h.	45m.					
0 0.03	+1 9.93						179 59	66.0	70.0	70.0	51.6	58.3	61.4	62.88
1 40.53	1 19.97	52 43 59.82	62.42	− 13 50 18.15	+13.02			65.5	70.0	70.0	51.0	59.0	60.5	62.67
0 45.13	1 19.93	52 43 4.38		− 13 49 22.71	13.99			65.8	69.8	69.6	50.4	58.5	60.5	62.43
6 2.20	1 19.60	52 36 16.72		− 13 42 35.05	14.36		P.	65.5	69.8	70.3	50.4	59.0	60.5	62.58
7 2.46	1 19.55	52 35 16.41		− 13 41 34.74	14.42			65.5	69.8	69.8	50.4	59.0	60.5	62.50
4 10.10	1 16.10	52 38 5.32		− 13 44 23.65				66.0	69.8	69.8	50.4	59.0	60.5	62.58
9 34.43	1 19.43	52 32 44.32		− 13 39 2.65	15.36		Means	65.72	69.87	69.92	50.70	58.80	60.65	62.608
														−.190
3 40.93	1 19.42	52 32 37.81		− 13 38 56.14	15.36									
0 24.51	1 9.45	53 36 57.79	63.10	− 14 43 15.44			November 2.	15h.						
0 0.22	1 10.91						179 59	67.6	67.2	67.0	52.2	56.8	66.7	62.92
0 0.22	1 39.95	52 15 16.07		− 13 21 33.72				67.6	68.6	68.0	53.0	58.6	66.0	63.63
0 0.14	1 13.96	52 25 25.98	62.23	− 13 31 44.50	15.94			67.6	68.3	68.0	53.7	57.3	67.0	63.65
3 5.46	+1 10.31	52 22 16.73		− 13 28 35.25			P.	67.0	68.3	68.2	52.6	58.4	66.5	63.50
0 20.91	−1 8.46	310 23 41.97				S.		67.0	67.0	67.6	52.6	57.4	66.5	63.15
0 5.46	.41	40.97						66.8	67.5	67.2	52.0	57.4	66.5	62.90
0 0.02	.39	41.56		+ 88 30 0.34	34.96		Means	67.27	67.95	67.67	52.68	57.65	66.53	63.292
0 4.32	.39	40.50												−.192
18.50	−1 8.39	40.68												
0.13	+0 16.91	16 9 13.79		+ 22 44 27.69	34.07		November 2.	20h.	45m.					
0.14	1 13.48	52 25 26.19	61.92	− 13 31 45.02	16.05	C.	179 59	68.5	66.0	66.0	53.4	53.3	68.6	62.63
0 0.38	+0 10.80	10 38 29.68		− 28 15 11.49	30.90			68.0	67.0	66.0	52.3	54.3	67.3	62.48
0 0.22	−0 17.40	343 11 22.58		+ 55 42 18.59	30.86			68.0	65.8	65.5	53.0	53.0	68.2	62.25
0 3.93	1 7.47	310 23 41.89					P.	67.5	67.0	65.8	51.6	54.0	67.5	62.23
3.58	.45	41.56						68.0	67.0	65.8	52.6	54.3	68.0	62.62
4.05	.45	42.03						67.7	66.6	65.8	52.2	54.0	67.4	62.28
3.66	.45	41.64		+ 88 29 59.34	34.64		Means	67.95	66.57	65.82	52.52	53.82	67.83	62.417
3.42	.45	41.40												−.192
0 4.32	.45	42.30												
0 0.01	−1 7.43	41.86					November 3.	20h.	30m.					
0.00	+1 13.61	51 46 14.38	63.77	− 12 52 31.36		P.	179 59	68.9	64.9	63.2	52.3	52.4	69.7	61.90
0 0.09	1 8.75	49 58 16.02		− 11 4 33.00				69.2	65.1	64.9	52.1	53.6	69.0	62.32
0 18.80							C.	69.5	64.9	63.6	52.4	52.1	69.9	62.07
0 0.09	2 33.52	69 19 21.31		− 30 25 38.29	41.47			69.1	65.2	64.4	51.5	53.8	69.0	62.17
0 0.01	0 26.69	24 30 13.72		+ 14 23 29.30	28.77		Means	69.17	65.03	64.02	52.08	52.97	69.40	62.112
0.02	39.71	34 5 26.38		+ 4 48 16.64	33.28									−.192
0 0.26	+0 11.03	10 38 31.06		+ 28 15 11.96	30.77	S.								
0 0.04	−0 17.77	343 11 24.89		+ 55 42 18.13	30.46		November 5.	21h.	20m.					
0 20.96	1 9.06	310 23 43.92					179 59	69.0	67.2	68.0	55.8	52.3	69.8	63.68
0 5.47	.06	43.99						68.5	67.8	69.0	54.8	55.0	68.8	63.98
0 0.04	.06	42.35						68.7	67.4	68.0	56.0	53.0	70.0	63.85
0 4.38	.07	41.96		+ 88 29 59.86	34.01		P.	68.7	68.2	68.7	55.8	54.4	69.4	64.20
18.42	−1 9.09	43.60						68.7	67.5	68.0	56.4	52.8	70.3	63.95
								68.5	68.2	68.3	55.5	54.6	69.4	64.08
0 0.04	+0 17.07	16 9 13.69		+ 12 44 29.33	33.92		Means	68.68	67.72	68.33	55.72	53.08	69.62	63.958
0.00	−0 10.87	349 34 53.49		+ 49 18 49.53	+32.03									−.190

THERMOMETERS.

R POINTS.	Stone.	Upper.	Lower.
	°	°	°
28, No. 1	46.5	47.5	47.0
" 2	46.5	47.0	46.5
2, " 1	54.0	61.0	57.0
" 2	55.0	62.5	58.0
3, " 1	57.0	64.0	60.3
5, " 1	61.0	61.5	60.0

		H. M. S.	
10.	App. R	20 6 38	(7 mag.)
11.	"	20 11 56	
12.	"	20 14 13	
13.	"	20 14 37	
14.	"	20 17 5	
15.	"	20 18 57	
16.	"	20 18 59	
20, 28.	"	20 21 50	(8 mag.)
21.	"	20 23 52	

1 to 7, 22 to 26. } −0″.04 applied for errors of division.
31 to 37, 46 to 50. }
14. −3″.59 applied for parallax.
21. −3″.52 " "
29, 44. +0″.18 applied for errors of division.
37. Interrupted by clouds.
40. Mic. coin. from Nov. 3 and 5

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M S.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
Nov. 5	1	η Tauri	4	. . .	15 15 45.2	47.5	47.4	32.7	37.4	43.8	42.33	. .	30.088	50.0	43.8		50.5	52.0
	2		3†	— 8 57.2	307 24 69.2	71.1	70.8	55.2	59.1	69.0	65.73	. .	30.200	52.5	45.8	57.5	53.0	52.0
	3	(Mic.)		5 42.2								30.098						
	4	"		5 22.2								.103						
	5	"		5 2.2								.105						
	6	"		4 42.2								.108						
	7	"		4 22.2								.122						
	8			3 2.2	64.6	65.9	65.1	50.0	53.1	65.0	60.62	. .			46.2			
	9	Polaris, S. P.	4	— 0 52.2	64.9	66.7	66.4	50.9	53.9	65.2	61.33	. .			46.2		52.5	52.2
	10			+ 3 24.8	67.0	68.5	67.2	52.7	55.9	66.9	63.03	. .			46.2			
	11	(Mic.)		5 52.8								30.038						
	12	"		6 12.8								.020						
	13	"		6 32.8								.032						
	14	"		6 52.8								.031						
	15	"		7 12.8								.029						
	16			+ 9 2.8	70.0	71.9	70.8	56.8	59.2	70.1	66.47	. .	30.196	51.8	46.0		52.0	51.8
6	†17	Weisse XX, 729 (Mic.)	4	. . .	52 6 49.6	51.4	51.9	38.6	41.2	51.2	47.32	29.032	30.182	52.5	45.9		51.5	53.0
	18	Saturn, S. L.	4	. . .	49 57 18.8	21.3	17.6	7.8	10.6	19.4	15.92d	. .	30.190	50.7	40.5	56.5	51.0	50.8
	19	Saturn, N. L. (Mic)	4	. . .	"	"	"	"	"	"	"	30.341						
	†20	a Pegasi	4	. . .	24 29 48.7	50.8	49.2	36.4	39.2	47.2	45.25	. .	30.194	49.5	40.9		47.5	49.7
8	21		1	— 0 48.0	55 9 61.6	62.1	61.0	48.4	50.0	60.2	57.22	30.663	30.150	55.5	59.0	54.2	57.3	54.7
	22	Sun, N. L. (Mic.)	2	31.0	"	"	"	"	"	"	"	.681						
	23		3	— 0 14.0	"	"	"	"	"	"	"	.669						
	24		4	+ 0 2.0	55 41 64.6	63.1	64.6	52.6	52.1	13.5	60.25d	.361						
	25	Sun, S. L. (Mic.)	5	18.0	"	"	"	"	"	"	"	.378						
	26		6	34.0	"	"	"	"	"	"	"	.361						
	27		7	+ 0 50.0	"	"	"	"	"	"	"	.391			59.6		58.0	57.3
10	28	Venus, S. L.	4	. . .	42 6 44.2	48.1	43.1	33.1	35.4	47.1	41.83	. .	30.340	51.5	45.3	60.7	52.8	51.8
	†29	Venus, N. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	30.661						
11	30			— 0 38.0	56 32 18.0	20.1	18.1	7.1	8.4	20.3	15.33d	29.543	30.324	52.3	49.2	60.0	55.7	54.5
	31	Sun, S. L (Mic.)	2½	24.0	"	"	"	"	"	"	"	.472						
	32			— 0 10.0	"	"	"	"	"	"	"	.476						
	33		5	+ 0 15.0	55 59 57.8	59.9	57.7	45.6	46.6	58.9	54.42	.558						
	34	Sun, N. L. (Mic.)		37.0	"	"	"	"	"	"	"	.561						
	†35		7	+ 0 48.0	"	"	"	"	"	"	"	.558			49.5		56.0	54.5
	36	Neptune.	4	. . .	51 44 61.6	63.9	60.2	48.9	50.1	63.2	57.98	. .	30.306	52.5	44.5			
	37	Aquarii, 7740	4	. . .	50 41 16.9	18.6	15.6	5.1	7.9	18.7	13.80	. .	30.306		44.1	58.7	51.2	52.3
	38	Saturn, N. L.	4	. . .	49 56 30.1	31.1	29.9	18.1	22.5	30.1	26.97	. .	30.305	52.5	42.3		48.5	51.3
	39	Saturn, S. L. (Mic.)	4	. . .	"	"	"	"	"	"	"	29.768						
	40	a Piscis Australis	4	. . .	69 16 44.3	46.8	47.5	34.7	37.2	46.6	42.85	. .	30.306	52.0	42.1		48.3	50.5
	41	a Ursæ Majoris, S. P.	4	. . .	281 32 31.6	33.1	30.4	19.2	23.7	30.5	28.08d	. .	30.308		42.1		47.5	50.4
	†42	ι Piscium	4	. . .	34 4 47.1	49.8	48.4	34.3	38.0	47.2	44.13	. .	30.310	50.4	40.7	58.5	51.5	51.5
	†43	a Andromedæ	4	. . .	10 38 20.6	22.8	21.0	9.1	14.1	19.9	17.92	. .	30.314	49.7	40.1		51.2	51.2
	†44	γ Pegasi	4	. . .	24 32 53.3	56.0	54.1	40.2	43.2	51.6	49.73	. .	30.318	49.5	40.1		51.2	50.7
	†45	a Cassiopeiæ	4	. . .	343 11 41.1	43.6	44.2	38.7	35.2	42.6	40.90	. .	30.330	48.8	39.6		50.5	50.2
	†46		3†	— 9 50.7	310 24 49.4	51.9	51.5	35.5	40.7	48.7	46.28	. .	30.334	48.0	40.8		50.2	49.7
	47	(Mic.)		6 39.7								30.018						
	48	"		6 19.7								.018						
	49	"		5 54.7								.007						
	50	"		5 34.7								.013						
	51	"		5 14.7								.010						
	†52	Polaris		— 3 19.7	52.9	56.0	54.7	38.7	44.1	52.1	49.75	. .						

DATE.	MICROMETER. Coincid.	Val. 1r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Nov. 5, 14h.	30.0523	62.750	Saturn .	18	0 8.97
6,			Sun . .	21	16 12.03
8, 15h.	.0442		Venus .	28	0 19.99
10,			Sun . .	30	16 13.58
11, 16h.	.0472		Saturn .	38	0 8.75

November 6. Error of Runs +0″.35. Temp. of circle 53°; of stone 57°
8. .52 55 55
11. .34 53 59

Assumed Latitude 38° 53′ 39″.25 North.

No. for ref.	CORRECTIONS FOR Instrument	CORRECTIONS FOR Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent. Declinations.	Reduction to 1850.0	Observers.
	′ ″	′ ″	° ′ ″	″	° ′ ″	″	
1	−0 0.01	+0 16.14	15 15 58.46	63.77	+ 23 37 44.56	+27.97	S.
2	4.11	−1 17.16	307 23 44.46				C.
3	4.48	.14	44.11				
4	4.60	.13	44.00				
5	4.54	.12	44.07				
6	4.57	.11	44.05				
7	5.92	.11	42.70				
8	0.48	.10	43.04				
9	0.04	.10	44.19	63.62	+ 88 30 1.44	33.85	
10	0.60	.10	45.33				
11	−0 0.86	.11	45.06				
12	+0 0.07	.11	45.99				
13	−0 0.91	.12	45.00				
14	1.07	.12	44.84				
15	1.19	.12	44.72				
16	−0 4.20	−1 17.13	45.14				
17	+1 3.97	+1 15.58	52 9 7.14	62.78	− 13 15 25.11	17.29	
18	+0 0.08	1 10.28	49 58 17.31		− 11 4 35.28		
19	−0 17.86						
20	+0 0.01	0 27.21	24 30 12.47	62.78	14 23 29.56	28.78	
21	−0 39.76						
22	40.29	1 15.30					
23	39.33						
24	19.58		55 26 44.77	62.78	− 16 33 2.74		
25	20.59	1 16.94					
26	19.53						
27	21.48						
28	0.04	0 40.63					
29	−0 38.51	0 39.12	41 7 2.43	63.44	− 3 13 19.74		
30	+0 33.87						
31	36.07	1 21.81					
32	35.98		56 17 58.87		− 17 24 16.18		
33	30.90						
34	30.70	1 20.07					
35	+0 30.80						
36	0.00	1 15 11	51 46 13.09	63.10	− 12 52 30.74		
37	−0 0.04	1 12.60	50 42 26.36		− 11 48 44.88	31.41	
38	−0 0.03	1 10.26	49 57 45.95		− 11 4 3.60		
39	+0 17.46	1 10.27					
40	−0 0.02	+2 36.80	69 19 19.63		− 30 25 37.28	+42.08	
41	+0 0.07	−4 45.26	281 27 42.89		+ 62 34 0.54	−24.55	
42	0.01	+0 40.56	34 5 24.70		+ 4 48 17.65	+33.40	
43	0.32	11.28	10 38 29.52		+ 28 15 12.83	30.26	
44	0.06	+0 27.43	24 33 17.22		+ 14 20 25.13	33.80	
45	0.05	−0 18.17	343 11 22.78		+ 55 42 19.57	+29.10	
46	4.95	1 10.39	310 23 40.84				
47	4.48	.41	40.35				
48	4.26	.41	40.13				
49	4.69	.41	40.56				
50	4.10	.41	39.97				
51	4.11	.41	39.98				
52	+0 0.54	.42	39.87				

NADIR POINTS—READINGS.

	A.	B.	C.	D.	E.	F.	Means.
November 6.		15h.					
179° 59′	66″8	70″2	68″4	55″5	56″1	66″8	63″97
	66.8	69.7	67.9	55.9	54.9	67.6	63.80
C.	66.8	69.9	68.5	55.6	54.8	67.1	63.78
	66.6	69.8	67.8	55.9	55.0	67.1	63.70
Means	66.75	69.90	68.15	55.72	55.20	67.15	63.812
							−.192
November 6.		23h.	20m.				
179 59	67.1	68.0	67.5	55.1	53.9	66.7	63.05
	65.9	68.5	67.6	54.2	54.6	65.2	62.67
C.	66.5	68.5	67.0	55.2	53.9	66.4	62.92
	66.4	68.9	67.4	55.3	54.9	66.5	63.23
Means	66.47	68.48	67.37	54.95	54.33	66.20	62.967
							−.189
November 8.		15h.	20m				
179 59	68.0	67.7	66.7	54.4	55.0	66.9	63.12
	67.3	68.8	67.2	54.2	56.1	66.1	63.28
C.	66.9	67.8	66.2	54.1	54.9	66.1	62.67
	66.8	68.2	67.0	53.6	55.8	65.2	65.77
Means	67.25	68.13	66.77	54.08	55.45	66.07	62.958
							−.192
November 11.		15h.	40m.				
179 59	66.9	68.8	68.1	54.8	54.9	67.8	63.55
	66.2	70.1	68.1	54.1	56.1	66.9	63.58
C.	67.4	69.9	68.3	55.1	55.4	67.8	63.98
	65.8	69.6	67.8	54.9	55.3	66.9	63.42
Means	66.57	69.65	68.08	54.72	55.43	67.35	63.633
							−.193
November 11.		23h.	20m.				
179 59	67.4	68.7	67.8	54.9	54.9	66.1	63.30
	66.9	69.2	68.2	54.1	55.4	65.7	63.25
	67.1	69.4	68.0	54.2	55.8	65.4	63.32
C.	66.7	69.1	68.0	53.9	55.6	65.5	63.13
	66.4	69.2	68.0	54.8	56.0	65.5	63.32
	66.8	69.5	68.0	54.7	56.2	65.6	63.47
Means	66.88	69.18	68.00	54.43	55.65	65.63	63.297
							−.194
November 14.		1h.	30m.				
179 59	65.6	67.5	66.0	51.2	59.8	62.0	62.02
	64.0	69.5	67.4	49.6	59.5	58.8	61.47
	65.8	70.2	68.8	52.2	59.2	62.5	63.18
S.	63.8	69.6	68.2	51.6	58.8	62.0	62.33
	64.0	68.6	66.6	50.5	59.2	61.0	61.65
	63.8	70.0	67.6	51.0	59.5	61.2	62.18
Means	64.50	69.23	67.43	51.02	59.33	61.32	62.139
							−.189

THERMOMETERS.

NADIR POINTS.	Stone.	Upper.	Lower.
	°	°	°
Nov. 6, No. 1	57.8	54.5	53.8
		56.3	54.5
" 2	56.5	50.2	50.8
8, " 1	54.2	58.2	56.0
		58.8	56.0
11, " 1	60.0	55.8	54.8
		57.5	56.0
" 2	58.5	50.0	51.0

17. App. R H. 20 M. 28 S. 30 (7 mag.)
37. " 22 4 9 (7 ")

17. Through clouds.
20 to 35, 44, 45. Very unsteady.
29. — 1″.49 applied for def. illumination.
42. Mic. B recorded 39″.8.
43. +0″.18 applied for errors of division.
46 to 52 —6″.04 " "
Nadir Points. Nov. 6. 8, and 11, App. error of collimation of mean of III and V, 4″ West.

						READINGS OF CIRCLE AND MICROMETER.								Barometer.	THERMOMETERS.				
						A.	B.	C.	D.	E.	F.	Means	Mic.		At.	Ext.	St.	Up.	Lo.
						° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
																40.6		50.5	49.
						310 24	54.1	56.9	56.7	40.0	45.0	53.8	51.08	. .					
							53.4	56.1	55.0	39.0	44.1	52.8	50.07	. .					
					5	40.3								30.072					
					6	0.3								.071					
					6	20.3								.072					
					6	40.3								.087					
					7	0.3								.089					
				5	+ 9	7.3		49.3	52.7	50.9	36.1	40.7	49.6	46.55	. .	30.336	47.5	46.2		50.5	49.5
				4	.	. .	27 19	55.0	58.9	56.6	42.1	46.1	54.4	52.18	. .	30.340	46.5	38.8		49.2	48.8
				4	.	. .	16 8	59.8	62.8	62.1	45.0	49.4	57.8	56.15	. .			37.9		49.3	48.8
				4	.	. .	26 32	34.3	39.5	35.5	23.0	29.2	32.2	32.28	. .	30.346	46.0	38.0		49.5	48.8
								"	"	"	"	"	"	"	29.695						
				4	.	. .	26 7	62.6	57.1	54.4	48.1	53.2	59.9	55.88	. .	30.340		37.5		49.3	48.8
				4	.	. .	27 5	66.5	70.9	68.5	55.1	57.6	64.5	63.85	. .	30.338	46.0	36.9	57.0	48.9	48.8
				4	.	. .	25 17	36.0	40.5	38.5	24.2	29.3	33.5	33.63	. .	30.340	45.5	36.3		48.4	48.0
				5	.	. .	22 41	28.5	35.1	34.0	16.3	27.1	26.0	27.83	. .	30.330	43.8	35.5	56.8	46.8	47.0
				4	.	. .	343 11	40.0	41.6	43.5	26.0	34.5	39.4	37.50	. .	29.800	52.5	46.2			
				3	−10	28.0	310 24	43.2	44.2	44.8	28.1	36.4	41.8	39.75	. .	29.802	52.8	46.0			
				4	− 0	20.0		47.8	49.5	48.8	33.8	40.0	46.3	44.37	. .						
			Polaris	5	+ 9	10.0		43.8	46.5	45.6	29.3	37.6	43.5	41.05	. .	29.802	53.0	45.5			
				6	18	50.0		31.1	33.6	30.5	17.2	25.6	31.1	28.18	. .						
				7	+28	39.0	310 23	66.0	67.4	65.5	50.8	62.0	65.0	62.78	. .	29.804	53.0	45.3			
		α	Arietis	4	.	. .	16 8	58.6	61.2	59.2	42.8	49.4	56.6	54.63	. .	29.786	52.5	43.8		52.0	51.5
		γ	Ceti	4	.	. .	36 17	29.0	31.5	28.4	18.0	25.8	25.8	26.42	. .	29.770	51.5	42.5		48.5	50.0
16			Saturn, S. L.	4	.	. .	49 55	15.8	17.0	17.0	3.5	8.7	14.6	12.77	. .	30.258	53.0	45.0	53.0	50.5	51.5
			Saturn, N. L. (Mic.)	4	.	. .		"	"	"	"	"	"	"	30.307						
				1	− 0	45.0	45 18	50.8	53.3	51.5	37.4	41.5	49.0	47.25	. .	30.252	52.2	45.0		49.7	51.0
			(Mic.)	2	− 0	29.5		"	"	"	"	"	"	"	30.140						
			Moon, S. L. "	4	+ 0	0.5		"	"	"	"	"	"	"	.210						
			"	5		17.0		"	"	"	"	"	"	"	.265						
			"	7	+ 0	46.0		"	"	"	"	"	"	"	.350						
17			Saturn, S. L.	4	.	. .	49 54	55.0	55.3	55.8	40.7	44.2	52.8	50.63	. .	30.202	55.5	51.5	53.0	56.5	55.0
			Saturn, N. L. (Mic.)	4	.	. .		"	"	"	"	"	"	"	30.326						
		α	Piscis Australis	4	.	. .	69 16	51.3	54.3	56.0	41.2	44.4	51.2	49.73	. .	30.200	56.0	53.6		55.5	54.7
		α	Pegasi	4	.	. .	24 29	51.7	51.3	51.7	37.0	40.3	47.3	46.55	. .	30.200	56.0	53.0		55.5	54.5
				1	− 0	48.0	40 40	33.2	32.8	31.6	20.6	24.8	31.3	29.05	. .	30.194	55.8	52.9		56.0	54.5
			(Mic.)	2		31.7		"	"	"	"	"	"	"	30.113						
			Moon, S. L. "	4	− 0	0.7		"	"	"	"	"	"	"	.157						
			"	6	+ 0	29.3		"	"	"	"	"	"	"	.278						
		α	Andromedæ	4	.	. .	10 38	20.2	21.0	21.2	7.8	13.0	17.5	16.78	. .	30.194	56.0	52.0		55.5	54.5
		α	Cassiopeiæ	4	.	. .	343 11	41.0	40.5	44.0	26.5	33.7	40.2	37.65	. .	30.188	55.7	51.8			54.5
				2	−20	45.0	310 24	27.5	27.4	28.0	11.0	19.3	22.4	22.60	. .	30.188	55.2	51.6			
				3	10	40.4		42.5	43.8	42.8	27.0	34.0	39.5	38.27	. .						
			Polaris	4	− 0	38.0		47.5	50.0	49.0	33.0	39.5	46.8	44.30	. .	30.186	55.0	51.5			
				5	+ 8	53.0		44.9	45.4	45.5	29.3	35.8	42.5	40.57	. .						
				6	+18	32.0		30.8	32.2	31.0	16.0	25.0	28.2	27.20	. .	30.184	55.0	51.0			
			Mars, S. L.	4	.	. .	26 42	70.8	72.5	70.5	57.3	61.5	68.5	66.85	. .	30.182	55.0	51.0		54.5	54.0
			Mars, N. L. (Mic.)	4	.	. .		"	"	"	"	"	"	"	30.386						
		γ	Ceti	4	.	. .	36 17	33.8	34.5	34.0	19.6	27.0	29.2	29.68	. .	30.178	50.0	50.6		53.5	54.0
		α	Ceti	4	.	. .	35 23	42.3	44.1	43.2	29.2	35.0	41.0	39.13	. .	30.176	53.9	50.4		53.0	53.5
		η	Tauri	4	.	. .	15 15	44.1	45.6	45.4	30.5	36.0	41.0	40.43	. .	30.170	53.4	49.8		52.5	53.0
		α	Tauri	4	.	. .	22 41	30.2	31.0	30.8	18.7	25.0	27.6	27.22	. .	30.156	53.0	49.4		52.5	53.0

DATE.	MICROMETER.		OBSERVED SEMI-DIAMETERS.		
	Coincid.	Val. 1 r.	Objects.	No.	Semi-diam.
	revs.	″			′ ″
Nov. 11.		62.750	Mars .	11	0 11.06
15, 0h.	30.0534				
16, 23h.	.0460		Saturn .	25	8.10
17, 23h.	.0335		Saturn .	32	9.09
			Mars .	47	10.97

Nov. 14. 16. } Error of Runs +0″.52. Temp. of circle and stone 55°

17. do. .59 do. do. 53

Nov. 17, 17h. Found level correct; adjusted collimation.

ASSUMED LATITUDE 38° 53′ 39″.25 NORTH.

CORRECTIONS FOR Instrument.	Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.	NADIR POINTS—READINGS.	A.	B.	C.	D.	E.	F.	Means.
′ ″	′ ″	° ′ ″	″	° ′ ″	″									
−0 0.02	— 1 10.43	310 23 40.63	63.10	+ 88 30 2.05	+31.94	C.	November 15.		0h.	30m.				
+0 0.63	.44	40.26					179° 59′	65″1	68″3	64″5	54″1	55″8	63″9	61″95
0.50	.45	40.12						65.0	68.5	65.2	53.9	56.2	63.2	62.00
0.78	.45	40.40						64.7	68.0	64.9	54.1	56.1	63.2	61.83
0.92	.46	40.53					C.	65.0	68.0	64.8	53.8	56.2	63.6	61.90
0.20	.46	39.81						64.6	68.4	64.9	53.6	56.2	64.0	61.95
0.31	.46	39.92						65.0	68.3	65.1	53.9	56.2	64.1	62.10
4.24	— 1 10.48	40.35					Means	64.90	68.25	64.90	53.90	56.12	63.67	61.955
0.00	+ 0 31.15	27 20 23.33		+ 11 33 19.02	35.22									−.190
0.03	17.49	16 9 13.67		+ 22 44 28.68	33.54		November 16.		22h.					
0.07	22.37	26 33 5.78		+ 12 20 36.57			179 59	67.0	67.6	67.6	53.2	55.4	64.4	62.53
22.18	22.38							66.3	68.0	67.8	53.2	56.4	64.2	62.65
0.03	29.65	26 8 25.56		+ 12 45 16.79	33.65			67.0	67.5	67.0	53.7	54.7	64.7	62.43
0.00	30.96	27 6 34.81		+ 11 47 7.54	33.36		P.	66.5	68.5	67.5	53.7	56.4	64.0	62.77
0.07	28.63	25 18 2.33		+ 13 35 40.02	32.12			66.8	68.2	66.7	53.8	55.3	64.7	62.58
+0 0.37	+ 0 25.37	22 41 53.57		+ 16 11 48.76	21.36			66.3	68.7	67.4	53.8	56.4	64.2	62.80
−0 0.08	— 0 17.61	343 11 19.81	61.95	+ 55 42 21.39	28.42	S.	Means	66.65	68.08	67.33	53.57	55.77	64.37	62.627
+0 4.94	1 8.42	340 23 36.27												−.192
−0 0.01	.45	35.91					November 17.		22h.	0m.				
+0 4.61	.49	37.18		+ 88 30 4.17	30.87		179 59	67.3	66.7	68.3	53.2	53.8	64.4	62.28
18·84	.51	38.57						66.5	68.0	69.0	53.2	56.0	63.3	62.67
+0 43.06	— 1 8.54	37.36						66.8	67.3	68.4	53.2	54.4	64.2	62.38
−0 0.10	+ 0 16.95	16 9 11.48		+ 22 44 29.72	33.47		P.	66.7	68.2	69.2	52.3	56.3	63.3	62.67
0.03	43.07	36 18 9.46		+ 2 35 31.74	33.25			66.6	67.5	68.4	52.3	54.4	63.6	62.13
0.01	+ 1 9.73	49 56 14.39	62.43	— 11 2 32.71		P.		66.6	68.2	68.3	52.3	55.3	63.6	62.38
16.21							Means	66.75	67.65	68.60	52.75	55.03	63.73	62.420
9.28														−.193
11.84							November 18.		16h.					
10.00	−57 1.28	44 21 35.81		— 5 27 54.13			179 59	67.9	67.5	67.9	53.8	55.9	65.9	63.15
10.09								67.1	68.0	67.9	52.7	56.9	65.0	62.93
−0 9.61								67.1	68.1	67.8	53.4	56.7	65.1	63.03
+0 0.02	+ 1 8.67	49 55 50.23	62.23	— 11 2 8.75			C.	67.2	67.9	67.5	52.9	56.1	65.2	62.80
−0 18.16								67.0	68.2	67.7	53.1	56.0	65.2	62.87
−0 0.23	2 32.72	69 19 22.22		— 20 25 40.74	42.77			67.2	68.5	67.8	54.0	56.8	65.2	63.25
−0 0.03	+ 0 26.56	24 30 13.14		+ 14 23 28.34	28.83		Means	67.25	68.03	77.77	53.32	56.40	65.27	63.005
−0 10.45														−.194
11.81	−54 14.23	39 46 5.07		— 0 52 23.59			November 20.		23h.	20m.				
7.85							179 59	64.2	69.5	69.5	54.2	56.5	62.2	62.68
−0 8.89								63.5	69.5	69.1	53.9	56.2	61.6	62.30
−0 0.46	+ 0 10.97	10 38 28.21		+ 28 15 13.27	29.90			63.5	69.7	69.7	54.1	56.7	62.1	62.63
−0 0.20	— 0 17.64	343 11 20.21		+ 55 42 21.27	27.90		C.	64.4	69.7	68.9	54.0	56.5	62.8	62.72
+0 22.12	1 8.53	310 23 36.19				S.		64.2	69.7	69.1	53.8	56.2	62.0	62.50
5.85	.53	35.59						63.8	69.8	68.8	54.5	55.7	62.8	62.57
0.01	.54	35.77		+ 88 30 5.51	29.94		Means	63.93	69.65	69.18	54.08	56.30	62.25	62.567
4.05	.57	36.05												−.187
17.65	— 1 8.61	36.24					November 27.		16h.	30m.				
+0 0.29	+ 0 21.97	26 43 18.14		+ 12 10 23.34		P.	179 59	65.8	71.8	70.0	56.0	62.6	61.0	64.53
−0 21.65								66.0	71.6	69.6	55.3	60.2	63.2	64.32
−0 0.24	42.96	36 18 12.40		+ 2 35 29.08	33.47	S.		62.5	70.0	68.8	51.5	58.8	59.5	61.85
−0 0.18	41.58	35 24 20.59		+ 3 29 20.59	31.89		S.	66.5	71.1	70.0	54.5	59.0	63.2	64.05
−0 0.07	16.00	15 15 56.36		+ 23 37 45.12	27.31			64.6	71.0	68.4	54.2	60.2	61.5	63.32
−0 0.15	+ 0 24.52	22 41 51.59		+ 16 11 49.89	+21.30			63.8	70.0	68.4	52.8	59.0	61.0	62.63
							Means	64.87	70.92	69.17	54.22	59.97	61.57	63.450
														−.190

THERMOMETERS.

IR POINTS.	Stone.	Upper.	Lower.
	°	°	°
. 15, No. 1	53.0	51.5	52.0
		55.0	52.8
16, " 1	53.0	55.0	53.0
17, " 1	53.0	57.0	54.0
18, " 1	53.3	58.8	56.8
		58.8	55.7
20, " 1	54.0	44.5	45.5
		48.5	47.2

		H. M. S.	
9.	Obs. Æ	1 51 19	
13.	"	2 22 32	(9 mag.)
14.	"	2 28 22	(6 ")
15.	"	2 45 37	(8.9 ")

1 to 8, 18 to 22, 42 to 46. −0″.04 applied for errors of division.
10 to 12, 16. Very unsteady.
23. Readings of microscopes direct.
40. +0″.18 applied for errors of division.

Nadir Point. Nov. 15. App. error of coll. of mean of III & V, 10″ W
18 & 20. " " 0″

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMET At.	Ext.	St.	U
			No.	m. s.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°
Nov. 17	1	α Aurigæ	4	. . .	353 3 51.0	51.7	52.2	38.5	41.5	49.5	47.40	. .	30.144	52.5	48.4		52
	2	δ Orionis	4	. . .	39 17 60.5	64.2	61.4	47.0	52.0	60.0	57.52	. .	30.150	52.2	48.8		
18	†3		1	— 0 49.0	57 58 35.2	33.3	36.5	23.3	28.4	36.1	32.13	29.608	30.088	55.7	58.1	54.5	57
	4	Sun, N. L. (Mic.)	2	34.0		"	"	"	"	"	"	.618					
	5		3	— 0 17.0		"	"	"	"	"	"	.638					
	6		4	+ 0 2.0	58 21 26.0	26.1	25.8	14.1	19.2	27.5	23.12	29.968					
	7	Sun, S. L. (Mic.)	5	16.0		"	"	"	"	"	"	.980					
	8		6	34.0		"	"	"	"	"	"	.982					
	†9		7	+ 0 49 0		"	"	"	"	"	"	.990			59.4		58.
	†10	α Lyræ	4	. . .	0 14 42.9	42.9	42.9	30.0	24.7	42.0	39.23	. .	29.970	58.0	63.8	54.0	60.
	11	ε Pegasi	4	. . .	29 41 73.3	70.6	71.3	58.3	63.7	72.2	68.23d	. .	29.934	62.0	61.2	54.8	60.
	12	Neptune	4	. . .	51 44 33.1	30.5	29.9	19.1	24.5	32.1	28.20	. .	29.930	62.0	60.0		62.
	13	Weisse XXII, 59	4	. . .	50 38 53.9	51.9	50.6	38.9	41.8	54.9	48.67	. .	29.930		60.2		62.
19	†14	Venus, S. L.	4	. . .	43 18 12.4	16.8	10.3	3.8	0.3	15.2	9.80	. .	30.400	49.5	36.5	56.7	50.
	†15	Venus, N. L. (Mic.)	4	. . .		"	"	"	"	"	"	30.574					
20	16	ε Pegasi	4	. . .	29 41 68.9	72.7	68.6	59.6	59.4	69.1	66.38d	. .	30.378	47.5	39.1		50.
	17	Weisse XXII, 59 (Mic.)	5	. . .	50 40 41.3	45.8	42.8	31.8	34.1	43.1	39.82	30.931	30.376	47.0	39.0		48.
	†18	Aquarii, 7740 (Mic.)	5	. . .		"	"	"	"	"	"	28.583					
	19	Saturn, S. L.	4	. . .	49 53 18.4	23.7	20.3	10.2	12.7	19.6	17.48	. .	30.374	45.8	38.9		42.
	20	Saturn, N. L. (Mic.)	4	. . .		"	"	"	"	"	"	30.318					
	†21	α Piscis Australis	4	. . .	69 16 39.7	46.3	45.8	33.4	35.8	42.6	40.60	. .	30.376	45.2	37.1		43.
	22	α Pegasi	4	. . .	24 29 45.6	49.8	49.0	34.3	37.4	44.9	43.50	. .	30.378	45.5	36.9		
	23	Mars, N. L.	4	. . .	26 45 12.6	19.8	18.8	2.1	9.9	8.5	11.95	. .	30.392	41.5	31.4		
	24	Mars, S. L. (Mic.)	4	. . .		"	"	"	"	"	"	29.728					
	25		1	— 0 45.6	27 7 65.1	72.7	71.0	53.9	61.1	60.8	64.10	29.848	30.388	39.5	30.0	52.8	40.
	26		2	32.2		"	"	"	"	"	"	.876					
	27	Moon, S. L. (Mic.)	3	— 0 15.8		"	"	"	"	"	"	.938					
	28		4	+ 0 6.2		"	"	"	"	"	"	.982					
	†29		5	16.8	26 33 63.9	73.5	71.0	54.7	60.1	60.9	64.02	29.638					39.
	30	Moon, N. L. (Mic.)	6	30.2		"	"	"	"	"	"	.640					
	†31		7	+ 0 42.7		"	"	"	"	"	"	.698					
27	†32	Sun, N. L. (Mic.)	3	— 0 18.5	59 44 60.0	65.2	64.4	45.0	54.2	58.2	57.83	31.698	30.186	44.5	37.0		
	†33	Sun, S. L.	5	+ 0 18.5	60 15 54.5	57.2	58.0	44.5	46.4	51.0	51.93	. .	30.182	44.7	37.6		48.
29	34	Sun, S. L. (Mic.)	3	— 0 18.0	60 37 30.5	39.7	38.7	20.8	32.6	28.9	31.87d	30.558	30.372	33.0	29.2		
	†35	Sun, N. L. (Mic.)	5	+ 0 18.0	60 4 54.5	63.8	64.0	44.4	53.0	51.8	55.25	30.558					
	36	α Aquarii	4	. . .	39 55.62.4	70.6	70.2	51.4	63.5	62.0	63.35	. .	30.452	34.3	25.2		
	37	ι Piscium	4	. . .	34 4 43.2	51.5	51.2	30.6	41.3	37.0	42.43	. .	30.460	32.0	22.8		35.
	†38	α Andromedæ	4	. . .	10 38 13.0	23.8	25.2	3.5	21.0	7.0	15.58	. .	30.476	31.2	22.0		35.
	39	α Cassiopeiæ	4	. . .	343 11 34.2	42.1	44.5	22.0	36.2	28.8	34.63	. .	30.480	30.7	21.5		
	40		3	—10 53.0	310 24 41.7	51.0	52.0	27.8	42.4	35.1	41.67	. .	30.482	30.0	22.0		29.
	41	Polaris	4	— 0 51.0		47.0	58.0	58.4	33.2	47.2	41.0	47.47	. .				
	42		5	+ 8 41.0		40.8	51.4	51.0	27.2	41.8	35.1	41.22	. .	30.470	29.0	22.0	
	43	α Ceti	4	. . .	35 23 33.8	43.6	43.8	23.0	35.5	27.2	34.48	. .	30.494	27.5	19.0		32.
	44	α Persei	4	. . .	349 34 56.5	65.8	69.3	45.5	56.8	47.5	56.90	. .	30.506	28.0	18.8		32.
	45	η Tauri	4	. . .	15 15 36.0	47.0	47.5	26.0	36.4	28.2	36.85	. .	30.504	26.8	18.4		
Dec. 3	46	η Tauri	4	. . .	15 15 39.8	42.5	44.9	23.2	37.8	33.1	36.88	. .	29.986	46.5	38.5	44.7	43.
	47	ζ Ursæ Minoris, S. P.	4	. . .	297 10 74.0	75.9	78.2	56.7	72.8	68.9	71.08	. .	29.990	46.0	39.0		43.
	48	α Tauri	4	. . .	22 41 27.2	29.8	32.2	11.8	28.2	23.8	25.50	. .	30.010	45.8	38.9		46.
	49	Weisse IV, 733, (Mic.)	6	. . .	24 47 22.0	23.7	25.5	5.0	20.7	14.1	18.50d	26.048				44.7	44.
	†50	Flora, (Mic.)	6	. . .		"	"	"	"	"	"	30.691					
	†51	Weisse IV, 794, (Mic. 4)	4	. . .		"	"	"	"	"	"	43.730	30.006	45.2	38.9		
	†52	Weisse IV, 824, (Mic. 4)	4	. . .		"	"	"	"	"	"	38.564					

DATE.	MICROMETER. Coincid.	Val 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			r ″
Nov. 18, 16h.	30.0314	62.750	Sun . .	3	16 15 22
19,			Venus .	14	0 17 45
20, 23h.	.0391		Saturn .	19	8 67
			Mars .	23	9 76
			Moon .	25	16 36.98
27, 17h.	.0523		Sun .	32	16 19 91
29, 17h.	.0507		Sun .	34	16 19 34
Dec. 3, 5h.	.0441				

Nov. 18. Error of Runs +0″.73 Temp. of circle 58°; of stone 54°
20 do. .00 do. 50 do. 54
27 do. .33 do. 47 do. 47
29 do. — .06 do. 35 do. ?
Dec. 3 do. + .13 do. 40 do. 40

Nov. 29. Found vertical wire II broken out.

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR Instrument.	CORRECTIONS FOR Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.
′ ″	′ ″	° ′ ″	″	° ′ ″	″	
- 0 0.16	— 0 7.15	353 3 40.41	62.23	+ 45 50 1.07	+19.49	S.
0.26	+ 0 48.01	39 18 45.79		— 0 25 4.31	+11.04	
26.03						C.
25.78	1 23.67					
24.78						
3.75		58 6 36.55	62.81	— 19 12 54.49		
3.12	1 25.56					
3.00						
- 0 2.42						
- 0 0.06	0 0.23	0 14 39.40		+ 38 39 2.66	—14.35	
- 0 0.14	0 32.42	29 42 40.79		+ 9 11 1.27	+21.11	
0.09	1 11.88	51 45 40.17		— 12 51 58.11		
- 0 0.24	1 9.33	50 39 58.24		— 11 46 16.18	31.90	
0.00	0 45.42	43 18 37.77	62.38	— 4 24 56.14		
- 0 33.46	0 43.99					
- 0 0.07	0 34.40	29 42 40.85		+ 9 11 0.78	21.24	
- 0 55.71	1 13.57	50 40 57.68		— 11 47 16.05	32.06	
- 1 31.77	1 13.47	50 43 25.06		— 11 49 43.43	32.16	
- 0 0.12	1 10.83	49 54 19.51		— 11 0 37.88		
- 0 17.45	1 10.81					
- 0 0.16	2 38.84	69 19 19.60		— 30 25 37.97	43.13	
- 0 0.02	0 27 61	24 30 11.09		+ 14 23 30.54	29.00	
- 0 0.02	+ 0 23 65	26 45 45.38		+ 12 7 56.25		
19.54						
4.12						
4.58						
3.44	—43 24.94	26 24 43.42		+ 12 28 58.21		
4.49						
26.03						
30.33	—10 1.79	26 24 30.67		+ 12 29 10.96		
0 28.96						
1 43.55	+ 1 35.22	60 1 9.40	63.26	— 21 7 26.89		S.
0 0.06	1 37.44					
31.89	1 41.48	60 22 22.12		— 21 28 41.10		
0 31.67	1 39.20					
0 0.01	0 52.10	39 56 55.46	60.36	— 1 3 15.85	28.05	
0.00	42.34	34 5 24.77		+ 4 48 14.84	34.29	
0.18	+ 0 11.79	10 38 27.55		+ 28 15 12.06	29.50	
0.04	— 0 18.98	343 11 15.69		+ 55 42 23.92	25.95	
0 5.96	1 13.63	310 23 34.00				
0 0.03	.62	33.82		+ 88 30 6.53	27.33	
0 3.80	— 1 13.61	31.41				
0 0.04	+ 0 44.89	35 24 19.33		+ 3 29 20.28	32.78	
0.00	— 0 11.63	349 34 45.27		+ 49 18 54.34	27.16	
0 0.03	+ 0 17.28	15 15 54.16		+ 23 37 45.45	26.83	
0 0.04	+ 0 16.26	15 15 53.10	60.65	+ 23 37 46.80	+26.79	
0.03	— 1 55.50	297 9 15.55		+ 78 15 35.65	—25.64	
0 0.05	+ 0 24.92	22 41 50.37		+ 16 11 49.53	+21.73	
4 11.77	27.62	24 51 57.39		+ 14 1 42.01	21.30	
0 39.79	23.71	24 47 2.42		+ 14 6 37.48		
14 21.87	27.23	24 33 23.86		+ 14 20 16.04	20.95	
8 57.32	+ 0 27.34	24 38 48.52		+ 14 14 51.38	+20.81	

NADIR POINTS—READINGS.

	A.	B.	C.	D.	E.	F.	Means.
November 29.		17h.					
179° 59′	60″5	71″0	70″0	51″4	58″3	57″0	61″37
	62.2	73.2	72.2	52.5	61.8	57.0	63.15
	61.0	71.2	69.8	51.2	58.5	56.5	61.37
S.	60.5	72.5	70.5	50.8	60.5	55.0	61.63
	62.6	72.5	72.0	52.5	61.6	57.8	63.17
	60.2	71.2	69.3	49.5	60.2	56.0	61.07
Means	61.17	71.93	70.63	51.32	60.15	56.55	61.958
							—.187
November 29.		23h.					
179 59	59.8	68.0	468.5	47.0	57.6	53.5	59.07
	61.0	69.9	70.8	48.5	61.0	53.8	60.83
	60.6	68.8	69.2	47.0	60.6	55.0	60.20
S.	59.5	70.0	70.3	46.5	59.4	53.4	59.85
	61.8	70.2	71.2	48.8	60.2	55.2	61.23
	62.8	71.5	71.3	49.5	62.0	55.5	62.10
Means	60.92	69.73	70.22	47.88	60.13	54.40	60.545
							—.187
December 3.		4h.					
179 59	63.7	65.8	67.9	46.1	59.4	58.7	60.27
	62.6	65.9	68.9	44.9	59.9	57.4	59.93
	63.8	66.6	69.1	46.5	60.1	59.1*	60.87
C.	64.0	67.5	69.8	45.8	62.0	58.8*	61.32
	63.8	67.8	69.8	46.5	61.0	69.0	61.32
	63.7	67.9	69.9	46.1	67.3	58.9	61.30
Means	53.60	66.92	69.23	45.98	60.62	58.65	60.833
							—.187
December 6.		3h.	10m.				
179 59	54.0	61.4	60.8	41.8	49.2	49.8	52.83
	53.5	62.0	61.8	41.8	50.5	49.3	53.15
	53.5	61.3	60.8	41.8	49.3	49.8	52.75
P.	54.0	62.5	62.5	42.5	52.0	49.8	53.88
	54.0	61.3	61.6	42.5	50.2	51.0	53.43
	53.2	62.0	62.5	41.2	50.5	50.0	53.23
Means	53.70	61.75	61.67	41.93	50.28	49.95	53.214
							—.184
December 7.		3h.	40m.				
179 59	61.5	66.2	67.5	60.9	56.2	56.8	61.52
	61.3	66.8	67.9	61.4	56.8	57.1	61.88
	61.3	66.7	67.7	60.6	56.9	56.2	61.57
C.	61.0	67.1	68.1	60.7	57.6	57.0	61.92
	61.0	67.1	68.1	60.9	57.5	56.4	61.83
	61.0	67.3	67.9	60.8	57.9	55.9	61.80
Means	61.18	66.87	67.87	60.88	57.15	56.57	61.753
							—.133
December 8.		3h.					
179 59	61.6	65.9	67.8	59.0	55.8	55.5	60.93
	61.0	65.2	67.8	58.0	56.5	55.5	60.67
	61.0	65.5	67.8	58.8	56.5	55.0	60.77
S.	61.0	65.0	67.8	58.5	56.5	55.5	60.68
	59.9	64.8	67.0	57.0	55.5	54.2	59.73
	60.0	65.4	67.0	57.2	55.8	55.0	60.07
Means	60.75	65.30	67.53	58.13	56.10	55.03	60.475
							—.187

THERMOMETERS.

R POINTS.	Stone.	Upper.	Lower.
	°	°	°
3, No. 1	44.7	45.0	44.0
		47.0	44.8
6, " 1		43.0	39.0
7, " 1	42.0	41.2	39.5
		41.0	39.3
8, " 1		46.5	43.5

	H.	M.	S.	
13, 17. App. R	22	3	28	(8 mag.)
18. "	22	4	10	(7 ")
49. "	4	33	31	(9 ")
50. "	4	34	28	(8.9 ")
51. "	4	36	9	(8.9 ")
52. "	4	37	59	(8.9 ")

3 to 9, 14, 15, 21 to 31. Very unsteady.
10. —0″.11 applied for errors of division.
15. —1″.41 applied for defective illumination.
18. Two obs. with mic. reduced to the meridian.
29. 38′ recorded for circle reading.
29 to 31. —9″.15 applied for defective illumination.
32. —0″.06 applied for errors of division.
33. —0″.11 " " "
35. —0″.05 " " "
38. +0″.18 " " "
50. —3″.82 " parallax.
51, 52. Reduction to wire 3, +0r.0440.
Nadir Point. Dec. 3. Cap on; considerable parallax; app. error of coll'n of mean of III and V, 2′ East.
" Dec. 7. " " " 2′ West.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS. At.	Ext.	St.	Up.	Lo.
			No.	M. s.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	°
Dec. 6	†1	Flora	5	. . .	24 39 55.3	59.8	61.7	40.3	51.3	48.2	52.77	. .	30.328	37.2	28.0		39.0	38.5
7	†2	Flora	4	. . .	24 37 36.5	39.5	42.0	35.5	33.7	28.2	35.90*d*	. .	30.520	38.7	29.4	42.0	40.2	38.8
8	3	*a* Persei	4	. . .	349 34 57.2	58.2	61.7	53.0	50.0	51.6	55.28	. .	30.396	44.7	39.0			
	4	*η* Tauri	4	. . .	15 15 39.5	40.7	43.2	35.2	35.8	32.2	37.76	. .	30.386	44.2	39.0		44.5	44.0
	5	*γ* Eridani	4	. . .	52 49 10.2	12.5	14.0	9.0	7.0	5.0	9.62	. .	30.380	43.5	38.7		43.5	42.5
	†6	Flora	4	. . .	24 35 10.4	11.9	12.9	5.9	3.8	2.5	7.90	. .	30.378	42.8	37.5		42.5	42.0
	7	*α* Aurigæ	4	. . .	353 3 43.1	47.0	50.5	41.0	42.0	38.5	43.68	[illegible]	30.378	42.3	38.2		43.0	42.0
	8	*β* Tauri	4	. . .	10 25 15.0	17.5	19.0	13.0	13.0	8.0	14.25	0 . .	30.374	42.5	38.2			
18	†9		1	— 0 51.0	62 32 31.2	34.4	33.9	27.8	29.0	25.1	30.23*d*	30.132	30.150	38.5	36.9	44.2	39.8	40.2
	10	Sun, S. L. (Mic.)	2	33.0		"	"	"	"	"	"	.139						
	11		3	— 0 16.0		"	"	"	"	"	"	.129						
	12		5†	+ 0 19.0	61 59 31.2	34.8	34.8	27.2	28.8	25.1	30.32	29.768					41.0	41.0
	13	Sun, S. L. (Mic.)	6	35.0		"	"	"	"	"	"	.788						
	†14		7	+ 0 51.0		"	"	"	"	"	"	.778						
	†15	*α* Lyræ	4	. . .	0 14 46.2	49.1	50.2	42.5	42.5	40.2	45.12	. .	30.142	39.0	37.5		41.5	41.2
	†16		1	— 0 46.1	25 21 52.6	55.5	58.1	47.2	48.2	45.1	51.12	. .	30.116	38.8	30.7	43.0	35.1	38.3
	17	(Mic.)	2	30.7		"	"	"	"	"	"	30.049						
	18	"	3	— 0 15.4		"	"	"	"	"	"	.090						
	19	Moon, S. L. "	4	0.0		"	"	"	"	"	"	.108						
	20	"	5	+ 0 15.4		"	"	"	"	"	"	.140						
	21	"	6	32.6		"	"	"	"	"	"	.168						
	22	"	7	+ 0 48.0		"	"	"	"	"	"	.204						
	23	*η* Tauri	4	. . .	15 15 37.1	39.2	41.4	30.8	34.7	28.4	35.27	. .	30.108	38.1	30.2		35.0	38.0
	†24	Flora (Mic.)	4	. . .	24 6 46.5	48.9	51.2	38.9	43.2	40.6	44.88	33.014					40.4	41.3
	†25	Anonymous (Mic.)	7	. . .		"	"	"	"	"	"	28.226						
	†26	Tauri, 1395 (Mic.)	4	. . .		"	"	"	"	"	"	29.790	30.096	38.7	29.9			
21	†27		2	—19 58.0	310 24 18.5	27.8	25.8	12.8	24.2	11.8	20.15	. .	29.978	32.0	20.5		28.5	30.0
	28		3	9 53.0		33.2	44.2	42.2	30.0	37.4	27.8	35.80	. .					
	29	Polaris	4	— 0 15.0		39.2	48.6	46.0	35.5	40.0	32.6	40.32	. .	29.958	29.0	20.0		25.5	29.5
	30		5	+ 9 36.0		34.0	42.0	41.0	30.6	34.6	28.0	35.03	. .					
	†31		6	+19 13.0		20.2	27.4	25.6	15.2	21.8	14.2	20.73	. .	29.956	27.5	19.8			
	32	*γ* Ceti	4	. . .	36 17 25.4	32.2	33.4	21.6	28.9	16.0	26.25*d*	. .	29.950	26.5	18.2			
	33	*α* Ceti	4	. . .	35 23 35.4	42.0	42.4	31.3	38.0	26.3	35.90	. .	29.954	26.5	17.6		32.0	33.0
	34	*α* Persei	4	. . .	349 34 50.8	60.0	62.5	48.5	53.0	44.0	53.13	. .	29.946	26.8	17.3		32.0	33.0
	†35	*η* Tauri	4	. . .	15 15 34.6	44.6	44.4	31.0	38.0	24.0	36.10	. .	29.936	25.5	16.8		30.5	31.0
	36	*γ'* Eridani	4	. . .	52 48 66.4	75.6	75.0	64.0	68.8	60.2	68.33	. .	29.936	26.5	16.6		29.5	29.5
	37	*α* Aurigæ	4	. . .	353 3 37.0	49.0	49.4	36.7	43.4	30.4	40.98	. .	29.914	24.2	14.4			
22	†38	Flora	4	. . .	23 47 64.4	66.8	71.1	52.9	66.1	53.2	62.42	. .	29.782	35.0	25.5	36.5	30.8	33.0
	†39	Weisse IV, 733	4	. . .	24 51 29.5	32.5	37.1	22.9	31.7	18.2	28.65	. .	29.790	34.5	24.8		29.4	32.5
	40	Weisse IV, 824	4	. . .	24 38 20.9	22.7	26.9	11.1	23.1	8.1	18.80	. .	29.790	34.2	24.4		29.0	
	†41	*δ* Orionis	4	. . .	39 17 56.9	61.7	63.8	49.7	58.6	49.2	56.65*d*	. .	29.788	33.7	24.2	36.2	35.0	35.0
	†42	*α* Orionis	4	. . .	31 30 46.4	50.1	53.7	38.5	46.8	36.9	45.40	. .	29.790	33.5	24.4		33.7	33.5
23	43	Sun, N. L. (Mic.)	2	— 0 35.0	61 54 60.0	66.2	66.0	53.4	61.3	50.2	59.52	22.763	29.804	33.2	30.8		33.0	34.0
	44	Sun, S. L. (Mic.)	5	+ 0 18.0	62 34 68.8	75.2	75.0	61.5	71.4	59.8	68.62	. .	29.794	33.0	30.1			
24	†45	*α* Lyræ	4	. . .	0 14 43.5	50.8	51.0	41.0	45.2	39.0	45.08	. .	29.648	38.5	40.0		40.0	38.5
	46	*α* Arietis	4	. . .	16 8 51.4	57.2	54.4	46.7	47.8	47.2	50.78	. .	29.788	38.5	29.2			36.0
	47	*γ* Ceti	4	. . .	36 17 25.8	32.0	28.6	26.0	26.3	22.4	26.84*d*	. .	29.788	36.0	30.5			36.0
	48	*α* Ceti	4	. . .	35 23 37.4	43.0	41.0	34.2	36.0	33.2	37.48	. .	29.792	35.5	30.6		35.0	36.0
	†49	*α* Persei	4	. . .	349 34 50.5	55.0	56.5	47.3	46.8	45.2	50.22	. .	29.808	35.0	29.5		35.5	35.5
28	50	Sun, N. L. (Mic.)	3	— 0 17.0	61 54 59.2	64.4	64.0	52.4	59.2	50.2	58.23	31.307	30.302	34.8	34.4	35.7	35.7	35.5
	51	Sun, S. L.	5	+ 0 17.0	62 26 11.0	15.8	15.2	7.0	13.3	1.6	10.65							
	52	*α* Orionis	4	. . .	31 30 45.0	48.6	51.5	40.0	45.5	35.7	44.38	. .	30.290	36.0	27.6	36.0	34.5	33.5

DATE.	MICROMETER. Coincid.	Val. 1 *r.*	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Dec. 18, 18*h*.	29.9900	62.800	Sun . .	9	16 20.19
23, 19*h*.	.9938		Sun . .	43	16 18.96
24, 19*h*.	.9880				
28, 19*h*.	.9897		Sun . .	50	16 18.84

Dec. 6. 7. 8. } Error of Runs +0″.13. Temp of circle 40°; of stone 40°

18.	do.	+ .03	do.	41	do.	43
21.	do.	— .47	do.	30	do.	?
22.	do.	— .31	do.	32	do.	36
24.	do.	.00	do.	37	do.	?
28.	do.	+ .07	do.	33	do.	36

Dec. 4. New wires put in : object glass taken out and cleaned.
6. Adjustments made by Lieut. Page.
7. Adjusted micrometer diaphragm : altered the reading of microscope D.
8. Adjusted for level and collimation.

ASSUMED LATITUDE 38° 53′ 39″.25 NORTH.

CORRECTIONS FOR		Corrected Readings.	Zenith Point.	Apparent Declinations.	Reduction to	Observers.	NADIR POINTS—READINGS.						
Instrument.	Object.		359° 59′		1850.0			A.	B.	C.	D.	E.	F.	Means.
′ ″	′ ″	° ′ ″	″	° ′ ″	″									
0 0.03	+ 0 24.52	24 40 17.32	53.03	+ 14 13 14.96		P.	December 15.		1h.					
0 0.07	+ 0 24.57	24 38 0.54	61.57	+ 14 15 40.28		C.	179° 59′	63″0	65″2	67″4	57″8	56″6	57″5	61″25
0.00	— 0 11.10	349 34 44.18	60.29	+ 49 18 55.36	+25.70	S.		62.0	65.0	66.5	56.4	56.0	56.0	60.32
								63.5	66.4	68.0	58.4	57.3	57.5	61.85
0 0.05	+ 0 16.47	15 15 54.18		+ 23 37 45.36	26.71		S.	62.0	66.4	67.0	58.2	57.6	55.8	61.17
0 0.06	1 19.46	52 50 29.14		— 13 56 49.60	29.79			61.6	65.0	67.2	56.5	56.8	55.8	60.48
0 0.01	+ 0 23.92	24 35 31.81		+ 14 18 7.73				61.4	65.4	66.2	55.5	56.5	55.4	60.07
0 0.10	— 0 7.36	353 3 36.42		+ 45 50 3.12	16.68		Means	62.25	65.57	67.05	57.13	56.80	56.33	60.855
0 0.06	+ 0 11.12	10 25 25.31		+ 28 28 14.23	+15.54									—.187
9.24						C.								
9.40	1 47.60						December 18		19h.					
0 8.62							179 59	61.5	67.9	66.8	58.6	59.7	56.1	61.77
0 13.83		62 17 48.55	61.52	— 23 24 7.78				62.1	67.9	66.1	59.5	58.2	56.9	61.78
12.41	1 45.04						C.	62·0	67.9	66.3	58.2	59.0	55.9	61.55
0 12.75								62.3	67.5	66.1	59.4	58.2	56.9	61.73
0 0.10	+ 0 0.26	0 14 45.28		+ 38 38 55.49	— 6.48		Means	61.97	67.80	66.33	58.92	58.78	56.45	61.707
														—.187
5.72														
7.45							December 18.		4h.					
8.08							179 59	60.5	66.7	67.7	56.6	58.9	54.4	60.80
7.23	—41 9.54	24 40 34.59	60.31	+ 14 13 4.97				60.7	65.8	66.6	56.8	57.3	55.0	60.37
7.19								61.0	66.5	67.4	57.2	58.6	55.1	60.97
6.58							C.	60.1	65.4	65.9	56.6	56.5	54.6	59.85
0 6.66								60.9	66.7	67.3	56.6	58.6	54.5	60.77
0 0.07	+ 0 16.62	15 15 51.96		+ 23 37 47.60	+26.48			60.6	66.5	67.4	56.1	56.4	54.5	60.25
3 9.74	23.65	24 3 58.79		+ 14 49 40.77			Means	60.63	66.27	67.05	56.65	57.72	54.68	60.500
														—.187
1 15.17	27.31	24 9 3.36		+ 14 44 36.20	23.61									
0 12.52	+ 0 27.28	24 7 24.68		+ 14 46 14.88	23.27									
20.32	— 1 12.64	310 23 27.83				S.	December 21.		2h.					
0 4.92	.66	28.06					179 59	57.4	68.8	68.2	56.0	60.0	52.8	60.53
0 0.06	.68	27.58	59.32	+ 88 30 11.11	21.67			56.2	66.0	66.4	52.2	58.2	49.5	58.08
0 4.65	.70	26 98						58.8	68.4	68.8	56.3	60.0	52.4	60.78
18.82	— 1 12.71	26.84					S.	56.5	67.6	67.2	53.4	58.8	50.0	58.92
								57.8	67.4	67.0	55.5	58.2	52.5	59.73
0 0.07	+ 0 45.65	36 18 11.97		+ 2 35 26.60	36.32			56.8	67.4	66.8	54.0	58.4	50.5	58.98
0 0.06	+ 0 44.23	35 24 20.07		+ 3 29 18.50	34.71		Means	57.25	67.60	67.40	54.57	58.93	51.28	59.505
														—.187
0 0.01	— 0 11.46	349 34 41.66		+ 49 18 56.91	23.65									
0 0.01	+ 0 17.01	15 15 53.12		+ 23 37 45.45	26.45									
0 0.10	+ 1 22.06	52 50 30.29		— 13 56 51.72	32.16		December 22.		5h.					
0.10	— 0 7.62	353 3 33.26		+ 45 50 5.31	14.78		179 59	57.6	65.2	67.1	51.9	59.5	49.9	58.53
0 0.09	+ 0 23.40	23 48 25.73	58.93	+ 15 5 12.45		C.		59.1	64.9	66.9	52.9	59.4	51.3	59.08
0 0.12	28.24	24 51 57.01		+ 14 1 41.17	22.16			58.6	65.5	67.2	53.0	60.1	50.9	59.22
							C.	58.6	65.5	66.9	53.1	59.3	51.6	59.17
0 0.10	27.98	24 38 46.68		+ 14 14 51.50	21.56			59.1	65.5	67.5	53.1	59.6	51.9	59.43
0 0.10	49.93	39 18 46.68		— 0 25 7.50	16.04			59.1	65.1	67.1	53.3	59.1	51.8	59.25
0.03	37.41	31 31 22.84		+ 7 22 16.34	+12.07		Means	58.68	65.28	67.12	52.88	59.48	51.23	59.113
7 33.67	1 45.48	62 20 37.63	59.20	— 23 26 59.18		S.								—.187
0 0.09	1 48.06													
0 0.10	0 0.25	0 14 45.23	58.90	+ 38 38 52.92	— 4.68		December 22.		17h.					
0.00	17.59	16 9 8.27	58.52	+ 22 44 29.50	+32.49		179 59	60.0	67.8	67.4	56.0	60.4	49.6	60.20
0 0.07	44.22	36 18 11.13		+ 2 35 26.64	36.38			59.0	66.8	67.0	53.0	59.5	47.8	58.85
0 0.01	+ 0 42.79	35 24 20.26		+ 3 29 17.51	34.77			59.8	67.5	67.4	54.0	60.5	49.0	59.70
0 0.00	— 0 11.11	349 34 39.11		+ 49 19 58.66	23.27		S.	58.0	66.5	66.5	52.2	60.0	46.8	58.33
1 22.70	+ 1 45.74	62 11 40.12	59.79	— 23 18 1.08		P.		60.0	67.2	68.0	55.0	61.0	49.6	60.13
0 0.00	1 48.31							59.0	66.8	67.0	53.8	61.0	47.0	59.10
0 0.02	0 37.77	31 31 22.13	57.64	+ 7 22 14.76	+12.49		Means	59.30	67.10	67.22	54.00	60.40	48.30	59.386
														—.187

THERMOMETERS.

NADIR POINTS.	Stone.	Upper.	Lower.
	°	°	°
c. 18, No. 1	44.2	43.0	42.0
" 2	43.0	37.5	39.0
21, " 1		32.5	32.5
22, " 1	36.2	30.2	33.0
		34.5	34.5

	H. M. S.	
1. App. R	4 31 8	
2. "	4 30 5	(8.9 mag.)
6. "	4 29 4	
24. "	4 19 24	(8 mag.)
25. "	4 19 47	(8 ")
26. "	4 22 32	(6 ")
38. "	4 16 18	(8.9 ")
39. "	4 33 31	(8 ")
40. "	4 37 59	(7.8 ")

1. —3″.79 applied for parallax.
2, 6. —3″.78 " " "
9 to 14, 24 to 26, 41, 42. Very unsteady.
15, 45. —0″.11 applied for errors of division.
16. Mic. D recorded 57″.2.
24, 25. Very poorly defined.
24.—3″.55 applied for parallax.
26. Three obs. with mic. reduced to the meridian.
27 to 31. —0″.04 applied for errors of division.
35. Mic. F recorded 34″.0.
38. —3″.44 applied for parallax.
39. Faint; through thin clouds.
41, 42. Through clouds.
49. Mic. F recorded 35″.2.

DATE. 1847.	No. of ref.	OBJECTS OBSERVED.	Vertical wires.	Hour Angles.	READINGS OF CIRCLE AND MICROMETER. A.	B.	C.	D.	E.	F.	Means	Mic.	Barometer.	THERMOMETERS At.	Ext.	St.	Up.	Lo
			No.	M. S.	° ′ ″	″	″	″	″	″	″	Revs.	In.	°	°	°	°	
Dec 28	1	μ Geminorum	4		16 18 21.0	25.4	25.0	13·4	23.2	9.7	19.62		30.272	35.0	26.5		31.5	32
	2	51 (Hev) Cephei	4		311 39 31.5	35.0	37.0	25.0	33.2	21.8	30.58		30.264	33.8	27.2		32.0	33
	3	α Canis Majoris	4		55 22 58.4	63.8	64.2	54.0	60.5	50.3	58.53		30.264	33.2	27.0		32.0	32
	4	ε Canis Majoris	4		67 37 24.1	30.8	31.3	22.3	29.8	17.8	26.02d		30.268	32.5	26.5		31.7	33
	5	Jupiter, S. L.	4		16 18 42.8	49.0	48.4	36.8	43.0	32.2	42.03		30.268	32.0	25.4		31.7	33
	6	Jupiter, N. L. (Mic.)	4			"	"	"	"	"	"	30.725						
	7	α Canis Minoris	4		33 16 27.8	35.0	32.8	25.3	31.8	20.6	28.88							
	†8	β Geminorum	4		10 30 18.3	25.0	24.0	16.5	23.5	8.8	19.35		30.270	32.0	26.0		29.5	31
	9	15 Argus	4		62 43 51.0	59.0	57.3	47.3	53.3	42.8	51.78		30.274	32.0	25.5		29.5	30
29	10	Sun, N. L. (Mic,)	3	— 0 18.0	61 52 15.1	22.9	20.2	10.2	20.4	7.3	16.02d	31.750	30.320	36.8	40.8			
	11	Sun, S. L.	5	+ 0 18.0	62 22 58.0	66.0	63.0	51.8	62.2	51.2	58.70		30.336	37.0	41.5			37
	12	ϑ¹ Ceti	4		47 50 47.8	51.8	53.4	45.0	48.8	39.0	47.63		30.304	40.6	38.4	40.5		38
	13	Mars, N. L.	4		24 26 41.6	44.8	47.4	38.0	46.5	32.0	40.72		30.306	40.8	37.0		41.0	38
	14	Mars, N. L. (Mic.)	4			"	"	"	"	"	"	29.712						
	15	γ Ceti	4		36 17 26.9	30.5	33.2	24.1	30.1	18.8	27.27		30.306	41.0	36.2		40.5	38
	16	α Ceti	4		35 23 38.5	41.8	43.2	33.5	39.2	30.0	37.70		30.300	40.5	35.9		40.5	38
	17	α Persei	4		349 34 50.8	54.6	58.2	45.2	49.2	37.6	49.27		30.304	40.5	35.0		39.5	38
	18	η Tauri	4		15 15 35.4	40.0	40.6	31.2	37.0	26.6	35.13		30.304	40.0	35.0		39.5	38
	19	γ¹ Eridani	4		52 49 10.3	14.8	14.8	7.2	13.0	2.0	10.35		30.304	40.0	33.8		38.0	39
30	†20		1	— 0 49.5	62 19 30.2	36.4	33.9	26.8	31.9	25.4	30.77	30.091	30.276	40.5	45.0	38.7	42.0	39
	21	Sun, S. L. (Mic.)	2	33.0		"	"	"	"	"	"	.099						
	22		3	— 0 16.5		"	"	"	"	"	"	.146						
	23		†	+ 0 4.5	61 46 26.7	32.4	30.7	24.1	30.0	21.9	27.63	29.664					42.5	39
	24		5	16.5		"	"	"	"	"	"	.692						
	25	Sun, N. L. (Mic.)	6	33.5		"	"	"	"	"	"	.688						
	†26		7	+ 0 50.5		"	"	"	"	"	"	.680			44.8			

DATE.	MICROMETER. Coincid.	Val. 1 r.	OBSERVED SEMI-DIAMETERS. Objects.	No.	Semi-diam.
	revs.	″			′ ″
Dec. 28.		62.800	Jupiter .	5	0 23.10
29, 19h.	29.9879		Sun .	10	16 17.92
2h.	30.0002		Mars .	13	0 9.03
30, 19h.	29.9896		Sun .	20	16 19.22

December 29. } Error of Runs +0″.13. Temp. of circle and stone 40°
30. }

Assumed Latitude 38° 53′ 39″.25 North.

CORRECTIONS FOR Instrument.	Objects.	Corrected Readings.	Zenith Point. 359° 59′	Apparent Declinations.	Reduction to 1850.0	Observers.
′ ″	′ ″	° ′ ″	″	° ′ ″	″	
-0 0.03	+0 18.06	16 18 37.71	57.64	+ 22 34 59.18	+ 7.59	P.
0.00	−1 9.19	311 38 21.39		+ 87 15 15.50	4.92	
0.07	+1 29.14	55 24 27.74		− 16 30 50.85	1.12	
0.07	2 29.02	67 39 55.11		− 28 46 18.22	+ 0.16	
-0 0.02	0 17.55	16 18 36.50		+ 22 35 0.39		
-0 46.16	17.53					
0.00	40.45	33 17 9.43		+ 5 36 27.46	− 7.07	
0.04	0 11.46	10 30 30.77		+ 28 23 6.12	3.55	
0.00	1 59.57	62 45 51.35		− 23 52 14.46	−13.84	
1 50.70	1 44.02	62 8 27.25	58.54	− 23 14 49.46		S.
-0 0.04	1 46.51					
-0 0.03	1 6.52	47 51 54.18	58.47	− 8 58 16.46	+44.37	
0.09	0 23.09	24 27 12.93		+ 14 26 24.79		
18.15						
-0 0.17	44.45	36 18 11.89		+ 2 35 25.83	36.91	
-0 0.04	+0 43.03	35 24 20.69		+ 3 29 17.03	35.29	
-0 0.01	−0 11.16	349 34 38.10		+ 49 18 59.62	22.54	
-0 0.02	+0 16.56	15 15 51.71		+ 23 37 46.01	26.24	
-0 0.04	1 20.09	52 50 30.40		− 13 56 52.68	+33.39	
6.94	1 45.20	62 4 48.78	58.76	− 23 11 10.77		C.
7.11						
-0 9.82						
+0 20.43						
18.64	+1 42.70					
18.78						
+0 19.06						

THERMOMETERS. NADIR POINTS.	Stone.	Upper.	Lower.
	°	°	°
24, No. 1		41.5	38.5
24, " 2		41.5	39.0
28, " 1	35.7	37.0	35.5
" 2	36.0	37.0	36.5
30, " 1	38.7	43.0	39.8
		44.0	40.0

8. —0″.04 applied for errors of division.
20 to 26. Very unsteady; through mist.

NADIR POINTS—READINGS.

		A.	B.	C.	D.	E.	F.	Means.
December 24.			19h.					
179° 59′		59″4	67″9	66″9	55″0	59″5	53″0	60″18
		57.0	65.8	65.5	52.4	58.8	49.8	58.22
		59.2	66.8	66.2	54.8	60.0	52.0	59.83
	S.	57.2	65.6	65.4	51.8	59.0	51.0	58.33
		58.9	67.2	66.6	54.2	60.4	50.5	59.63
		56.6	65.8	65.5	51.4	59.5	51.2	58.33
Means		58.05	66.42	66.02	53.27	59.53	51.25	59.089
								—.187
December 24.			Night.					
179 59		59.5	64.0	62.8	57.0	52.5	57.4	58.87
		58.2	64.2	63.0	54.2	54.2	55.2	58.17
		58.3	64.5	62.4	56.2	53.9	56.0	58.55
	S.	57.4	64.5	62.0	55.0	54.8	55.0	58.12
		59.0	65.8	62.8	57.0	55.2	57.0	59.47
		58.5	65.5	63.0	57.2	54.2	55.8	59.08
Means		58.53	64.75	62.67	56.10	54.13	56.07	58.708
								—.187
December 28			19h.					
179 59		60.7	67.2	66.2	55.7	60.6	51.8	60.37
		60.0	67.3	66.3	55.0	61.8	50.7	60.18
		60.5	66.8	66.0	55.0	60.6	51.8	60.12
	P.	59.0	66.2	65.7	53.6	60.0	50.0	59.08
		60.0	67.0	66.0	55.2	61.2	51.0	60.07
		60.0	67.0	66.0	55.2	61.2	51.0	60.07
Means		60.03	66.92	66.03	54.95	60.90	51.05	59.980
								—.187
December 28.			5h.					
179 59		58.0	63.5	63.1	52.8	57.3	49.3	57.35
		57.2	63.4	63.5	52.8	58.2	48.3	57.07
		58.2	63.5	63.5	53.0	57.4	50.0	57.60
	P.	58.8	64.7	65.0	53.2	60.0	50.3	58.67
		58.6	64.7	64.0	53.2	58.4	50.3	58.20
		58.0	64.7	64.3	52.4	59.0	50.0	58.06
Means		58.13	64.08	63.92	52.73	58.38	49.70	57.825
								—.186
December 29.			19h.					
179 59		58.0	67.0	65.6	53.0	61.6	50.4	59.27
		57.2	66.2	64.0	52.0	59.0	49.2	57.93
		59.0	67.0	65.6	54.0	62.0	50.8	59.73
	S.	57.5	66.1	64.4	51.8	60.4	49.0	58.20
		58.4	66.4	65.0	52.0	60.5	50.0	58.72
		57.6	66.2	64.6	51.8	61.8	49.2	58.53
		57.95	66.48	64.87	52.43	60.88	49.77	58.730
								—.190
December 29.			6h.					
179 59		59.0	64.8	64.0	55.0	58.5	52.5	58.97
		58.0	64.0	64.8	53.6	57.8	51.2	58.23
		59.2	64.8	54.2	54.8	57.0	52.0	58.67
	S.	57.5	63.5	63.5	53.6	58.2	51.0	57.88
		59.9	65.2	65.0	56.3	59.0	53.4	59.80
		67.9	65.0	64.5	53.9	57.2	51.8	58.38
Means		58.58	64.55	64.33	54.53	57.95	51.98	58.655
								—.190
December 30.			19h.					
179 59		59.7	66.5	65.6	54.2	60.1	53.4	59.92
		60.0	65.7	64.5	54.8	58.6	54.5	50.68
	C.	59.9	66.5	64.8	54.9	59.4	54.4	59.98
		60.3	67.7	63.9	56.0	59.1	55.3	60.22
Means		59.97	66.35	64.70	54.98	59.30	54.40	59.950
								—.187

OBSERVATIONS

WITH

THE MERIDIAN CIRCLE,

1847.

NATIONAL OBSERVATORY.

DATE. 1847.	No. for ref.	OBJECTS OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Means.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Means	Mic.	Barometer.	THERS. At.	Ex.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	*Revs.*	*In.*	°	°
Jan. 5	1	Sun, 1st L. } N. L.	14.1	26.2	38.4	50.3	2.4	14.1	26.0	19 3 50.24	298 46 19.7	22.6	21.9	21.5	21.42	. .	29.892	49.5	50.9
	2	Sun, 2d L. }	35.2	47.5	59.5	11.2	23.2	35.3	47.4	19 6 11.32									
	3	*a* Cygni	5.3	21.0	36.3	51.8	7.2	23.0	38.7	20 36 51.90	5 50 42.5	41.9	31.6	35.7	37.92	. .	29.904	50.5	51.8
	4	γ Pegasi	28.2	39.5	50.7	1.8	13.2	24.8	36.0	0 6 2.03	335 26 54.0	51.9	50.8	49.2	54.47	. .	29.948	50.5	48.2
	5	ϵ Piscium, 288	8.0	19.0	30.0	41.0	52.0	3.0	14.0	0 55 41.00	328 10 53.8	54.2	51.2	53.8	53.25	. .	29.950	50.5	46.9
	6	δ Eridani, 1148	3.4	14.6	25.7	36.6	47.7	59.0	9.6	3 35 36.66	310 50 10.3	13.7	9.8	11.1	11.23	. .	29.956	46.5	41.5
	7	Jupiter, 2d & N. L.	10.0	21.6	33.2	44.8	56.5	8.4	20.1	4 24 44.94	342 5 17.1	20.2	14.2	19.2	17.67	. .	29.958	46.0	41.0
	8	β Orionis	19.2	30.5	41.6	52.8	4.2	15.4	..	5 7 47.28	312 44 16.2	19.6	16.8	17.4	17.50	. .	25.952	45.0	40.8
	9	*a* Orionis	2.0	13.0	24.0	35.0	46.0	57.0	8.0	5 47 35.00	328 29 12.0	11.9	11.2	13.3	12.10	. .	29.956	44.5	40.7
	10	μ Geminorum	48.4	0.5	12.5	24.5	36.5	48.5	0.4	6 14 24.47	343 41 43.2	48.0	38.8	44.0	43.47	. .	29.958	44.5	39.5
	11	*a* Canis Majoris	32.0	43.3	54.8	6.4	17.9	29.4	40.9	6 39 6.39	304 37 0.5	2.8	1.6	2.0	1.72	. .	29.962	45.0	38.0
	12	*a* Lyræ	42.4	56.5	10.5	24.5	38.4	52.4	6.5	18 32 24.45	359 45 10.8	8.0	7.6	6.0	8.10	. .	29.990	44.7	44.8
6	13	Sun, 1st L. } N. L.	38.1	50.0	2.0	13.7	25.6	37.5	49.7	19 18 13.80	298 53 19.0	19.5	13.8	20.0	18.07	. .	29.968	45.3	44.7
	14	Sun, 2d L. }	59.4	11.4	23.3	35.2	47.1	59.0	10.5	19 10 35.13									
	15	*a* Cassiopeiæ	34.2	54.0	13.5	32.5	52.0	11.6	31.0	0 32 32.69	. . . .	..	..	..	..	. .			
	16	β Ceti	0.1	12.0	23.4	34.5	46.5	58.0	9.6	0 36 34.87	302 18 9.0	5.3	4.3	5.8	6.10	. .	29.972	49.3	47.2
	17	Polaris.	6.0								49 35 39.2	26.2	25.5	33.2	31.02	. .	29.872	49.4	46.8
	18			12.0							27.8	15.2	14.4	21.0	19.60	. .			
	19				8.0						21.0	9.4	9.3	15.6	13.83	. .			
	20					6.0				1 5 6.29	17.0	4.5	5.3	10.4	9.30	. .	29.880	49.6	47.5
	21						4.0				19.4	7.8	8.1	14.5	12.45	. .			
	22							3.5			27.0	14.7	14.3	20.0	19.00	. .			
	23								4.5		37.7	25.2	25.0	32.0	29.98	. .	29.880	49.7	46.1
	24	β Orionis	20.1	31.4	42.0	53.0	4.0	15.5	26.6	5 7 53.23	312 44 17.0	16.8	13.8	19.4	16.75	. .	29.818	47.3	39.7
	25	β Tauri	42.5	55.4	7.3	20.0	32.3	45.1	57.2	5 17 19.97	349 34 52.0	45.2	39.0	49.5	46.42	. .	29.818	47.0	45.2
	26	δ Orionis	20.9	32.0	42.3	53.7	4.7	15.7	26.7	5 24 53.71	320 41 62.3	58.8	54.4	62.3	59.45	. .	29.810	47.0	45.3
	27	*a* Columbæ	8.9	22.4	35.5	49.0	2.0	15.8	28.5	5.34 48.87	286 59 37.8	41.3	36.7	46.7	40.62	. .	29.806	47.0	40.3
	28	*a* Orionis	2.6	13.8	24.7	35.8	46.1	58.0	8.9	5 47 35.70	328 29 13.0	12.5	8.0	15.8	12.32	. .	29.800	47.0	40.8
	29	51 (Hev.) Cephei		34.5							48 20 52.0	37.0	35.2	45.0	42.30	. .			
	30				20.0						48.0	34.0	32.3	41.7	39.00	. .			
	31					11.5				6 28 10.70	48.8	34.0	32.0	40.8	38.90	. .			
	32						57.0				47.8	34.3	32.0	41.5	38.90	. .			
	33							50.5			50.2	37.0	35.6	44.0	41.70	. .	29.776	46.1	41.2
	34	δ Geminorum	6.0	17.9	29.9	41.5	53.1	5.1	17.1	7 11 41.51	343 21 62.3	60.8	57.0	61.7	60.45	. .	29.760	45.8	37.6
	35	a^2 Geminorum	53.0	6.3	19.3	32.0	44.8	57.8	10.9	7 25 32.01	353 19 20.0	19.0	12.0	29.8	17.75	. .	29.750	45.5	38.1
	36	*a* Canis Minoris	26.7	38.0	48.8	59.5	10.5	22.0	32.9	7 31 59.79	326 43 37.0	36.0	32.0	40.6	36.40	. .	29.750	45.5	38.1
8	37	Sun, 1st L.	24.5	36.1	48.0	59.8	12.0	23.8	35.7	19 16 59.98	.. .. ..	..	..	..	. .	. .	30.236	31.0	19.9
	38	Sun, 2d L.	46.0	57.8	9.9	21.5	33.4	45.7	57.8	19 19 21.73	.. .. ..	..	..	..	. .	. .			
	39	*a* Cassiopeiæ	35.5	56.1	15.2	34.7	54.4	13.2	33.0	0 32 34.59	16 48 6.3	6.8	7.7	9.0	7.45	. .	30.284	29.0	20.0
	40	ϑ^1 Ceti	31.5	43.0	54.2	5.0	16.0	27.0	38.0	1 17 4.96	312 8 62.5	59.2	62.1	62.3	61.52	. .	30.296	28.0	20.5
	41	*a* Arietis	40.5	52.4	4.4	16.5	28.5	40.0	52.5	1 59 16.40	343 50 61.0	57.6	55.2	58.4	58.05	. .	30.306	27.0	19.6
	42	γ^1 Eridani	3.0	14.4	26.0	37.5	49.4	0.5	11.6	3 51 37.49	307 10 40.0	38.3	33.3	40.1	37.92	. .	30.300	24.0	16.2
	43	*a* Tauri	18.5	29.7	41.2	52.7	4.0	15.2	26.8	4 27 52.59	337 18 28.8	22.0	23.4	25.3	24.87	. .	30.302	23.0	15.3
	44	δ Orionis	22.5	34.0	44.4	55.4	6.0	17.0	28.2	5 24 55.36	320 41 60.0	54.3	56.0	61.0	57.85	. .	30.304	20.0	14.1
	45	*a* Canis Majoris	34.2	45.6	57.0	8.2	19.6	31.0	42.6	6 39 8.33	304 36 60.6	58.3	61.4	62.5	60.70	. .	30.286	18.0	13.2
9	†46	Sun, 1st L. } N. L.	49.0	59.9	11.2	23.0	35.0	47.0	59.0	19 21 23.44	299 16 59.9	55.9	64.2	58.9	59.72	. .	30.342	28.5	28.8
	47	Sun, 2d L. }	9.1	20.7	32.3	43.9	56.1	8.0	20.0	19 23 44.28									
	†48	*a* Cygni	8.0	23.5	38.8	54.0	9.2	25.0	39.5	20 36 54.00	5 50 42.1	31.0	30.6	36.4	35.02	. .	30.314	30.5	30.0
11	49	β Ceti	2.8	14.6	26.5	38.6	49.8	1.2	13.4	0 36 38.13	302 18 16.6	12.7	17.6	19.6	16.62	. .	30.082	35.0	27.5
	50	ϑ^1 Ceti	33.5	44.7	55.2	6.1	17.5	28.6	39.0	1 17 6.37	312 8 57.0	56.3	59.0	61.8	58.52	. .	30.096	32.0	25.6
	51	*a* Arietis	42.0	54.0	5.8	18.0	30.0	42.0	53.8	1 59 17.94	343 50 57.0	51.6	56.1	55.1	54.95	. .	30.200	30.0	23.8
	52	γ Ceti	34.5	45.6	56.7	7.4	18.6	29.2	40.0	2 36 7.43	323 42 20.5	24.4	23.5	20.0	22.10	. .	30.112	28.8	23.0

DATE.	Clock +*m*.	Hourly Rate.	VALUE OF *n*.	VALUE OF *c*.	Error of Runs.	Mic. coin. At	Mic. coin.	1 rev. = 34″.406
h.	s.	s.	s.	s.	″	*h.*	*revs.*	
Jan. 5, 5	*f* 40.32	*g* .029	−0.043	+0.294	−0.09			
6, 5	40.73	.027			+ .25	4	40.216	
8, 5	42.31	.023			+ .09			
9, 21	42.47	.021			− .54			
11, 2	43.85	.018			+ .34			

* Prof. Major.
† Lieut. Maynard.

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN Æ.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850 0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mea
s.	M. s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″		Jan. 5	Day.	(M.)	°
- 40.03	+ 0 0.35	+ 0 0.04	—17 54.84	298 28 26.62	61.16	19 4 21.10	— 22 37 55.29	. .	. .					179
40..3	.35									64″2	57″9	54″2	63″9	60″0
40.07	.38	— .01	+ 0 5.92	5 50 43.83	. .	20 36 12.21	+ 44 44 21.92	+ 7.14	+24.26	64.9	58.9	55.2	64.1	60.7
										65.0	59.5	56.3	65.0	61.4
40.18	.29	.00	— 0 26.67	335 26 24.80	. .	0 5 22.14	+ 14 20 2.89	8.88	54.13	66.0	60.0	57.2	66.4	62.4
40.20	.28	.03	0 36.31	328 10 16.91	. .	0 55 1.08	+ 7 3 55.00	8.74	56.94					
40.28	.32	.02	1 8.40	310 49 2.80	62.58	3 34 56.70	— 10 17 20.53	7.35	45.54					
										65.02	59.08	55.73	64.85	61.1
40.30	.30 —	.02	0 40.25	342 4 37.40	. .	4 24 3.27	+ 20 58 14.07	. .	. .					
40.32	5.86 +	.02	1 4.08	312 43 13.44	. .	5 7 12.82	— 8 23 9.89	6.96	25.17					
40.34	0.28 —	.02	0 36.35	328 28 35.73	. .	5 46 54.94	+ 7 22 12.40	7.89	13.54		Jan. 5.	Night.	(Ma.)	179
40.36	.30	.01	0 17.39	343 41 26.07	. .	6 13 44.41	+ 22 35 2.74	8.88	+ 5.69	62.6	62.6	59.1	64.8	62.2
40.37	.33	.03	1 26.20	304 35 35.49	. .	6 38 26.25	— 16 30 47.84	6.05	— 1.78	64.4	63.4	59.6	63.4	62.5
40.45	.35	.01	0 0.25	359 45 7.84	59.52	18 31 44.35	+ 38 38 45.73	7.41	+ 3.04	64.5	62.4	61.1	62.4	62.6
										64.4	63.4	60.6	63.2	62.9
40.46	.35	.02	17 55.23	298 35 22.82	. .	19 8 54.35	— 22 30 58.40	. .	. .					
40.46	.35													
40.61	.47	. .	. . .	. . .	. .	0 31 52.55		8.90	. .					
										63.97	62.95	59.95	63.45	62.5
. .	.33	.01	— 1 32.04	302 16 34.05	60.44	0 35 54.59	— 18 49 47.14	8.88	66.21					
. .	. .	22.94	+ 1 8.50	49 36 16.58	. .						Jan. 6.	Day	(Ma.)	179
. .	. .	10.09	1 8.47	17.98	. .									
										60.4	53.2	63.0	64.0	60.1
. .	. . —	2.52	1 8.44	19.74	. .					59.5	53.2	62.2	63.2	59.5
40.62	9.69 +	0.09	1 8.41	17.80	. .	1 4 35.36	+ 88 29 56.79	25.55	36.81	59.2	52.5	62.0	62.8	59.1
. .	. . —	2.26	1 8.46	19.65	. .					59.3	52.7	62.2	63.0	59.3
. .	. .	9.72	1 8.53	17.81	. .									
. .	. . —	22.24	+ 1 8.61	16.35	. .					59.60	52.90	62.35	63.25	59.5
40.73	0.31 +	.06	— 1 3.92	312 43 12.89	. .	5 7 12.81	— 8 23 8.30	6.97	25.33					
40.74	.31 +	.10	0 10.76	349 34 35.76	. .	5 16 39.54	+ 28 28 14.57	9.27	16.67		Jan. 6.	Night.	(Ma.)	179
40.74	.29 —	.00	0 47.82	320 41 11.63	. .	5 24 13.26	— 0 25 9.56	7.44	19.90	60.0	53.0	60.8	64.7	59.6
40.74	.39	.02	3 10.86	286 56 29.74	. .	5 34 8.52	— 34 9 51.45	4.69	21.36	61.0	53.0	63.0	64.8	60.4
										60.7	54.0	63.2	65.5	60.8
40.75	.28	.02	— 0 36.14	328 28 36.16	. .	5 46 55.23	+ 7 22 14.97	7.89	+13.62	61.7	55.5	63.0	65.0	61.3
. .	. .	5.42	+ 1 6 13	48 21 43.01	. .					60.2	53.5	62.2	64.0	59.0
. .	. . —	1.35	1 6 13	43.78	. .									
40.77	5.01 +	.05	1 6.12	45.07	. .	6 27 34.94	+ 87 15 22.40	60.62	— 0.89	60.72	53.80	62.44	64.80	60.4
. .	. . —	1.27	1 6.11	43.74	. .									
. .	. .	5.43	1 6.10	42.37	. .									
											Jan. 8.	Day.	(M.)	179
40.79	0.30	.08	+ 0 17.71	343 21 42.60	. .	7 11 1.02	+ 22 15 21.47	8.79	6.33	64.9	56.5	55.7	61.5	59.6
40.79	.32	.10	— 0 6.93	353 19 10.72	. .	7 24 51.54	+ 32 12 49.73	9.41	9.33	64.6	55.8	55.3	61.3	59.2
40.80	.28 —	.12	0 38.83	326 42 57.45	. .	7 31 19.27	+ 5 36 36.26	7.57	—14.33	64.0	56.3	55.9	62.0	59.5
										64.8	56.4	55.1	62.4	59.6
42.08	.34	. .	. . .	. . .	. .	19 17 28.62				64.0	56.2	55.5	62.5	59.5
43.22	.47 +	.01	+ 0 18.92	16 48 26.38	59.47	0 31 52.84	+ 55 42 6.16	8.96	+42.10	64.1	55.8	55.6	61.7	59.3
42.23	.32 —	.00	— 1 9.08	312 7 52.44	. .	1 17 23.05	— 8 58 27.78	8.51	61.51	64.0	56.0	55.2	62.0	59.3
42.24	.30	.00	0 18.17	343 50 39.88	. .	1 58 34.46	+ 22 44 19.66	8.95	47.90					
42.29	.32 +	.04	1 23.19	307 9 14.77	. .	3 50 55.52	— 13 57 50.45	7.06	43.69	64.34	56.14	55.47	61.92	59.4
42.30	.29 —	.04	0 26.48	337 17 58.35	. .	4 27 10.58	+ 16 11 38.13	8.54	28.87	.	Jan. 9.		(M.)	179
42.32	.29	.00	0 51.96	320 41 5.89	. .	5 24 13.33	— 0 25 14.33	7.45	+20.15					
42.35	.33	.03	1 31.96	304 35 28.71	. .	6 38 26.31	— 16 30 51.51	6.03	— 1.09	63.4	57.8	57.9	56.1	58.8
										64.1	58.2	58.2	57.2	59.4
42.70	.34 —	.17	—17 59.02	298 59 0.53	59.24	19 21 51.50	— 22 7 19.46	. .	. .	64.2	58.4	58.6	57.0	59.5
										63.8	57.9	58.0	57.1	59.2
42.72	.38 +	.01	+ 0 6.29	5 50 41.32	. .	20 36 11.66	+ 44 44 21.33	7.15	+25.38					
43.82	.33 +	.07	— 1 36.58	302 16 40.11	60.25	0 35 54.64	— 18 49 40.89	8.95	66.44	63.87	58.07	58.18	56.85	59.2
43.84	.32 —	.06	1 7.88	312 7 50.58	. .	1 16 22.85	— 8 58 30.42	8.54	61.72					
43.85	.30 —	.01	0 17.95	343 50 36.99	. .	1 58 34.39	+ 22 44 15.99	8.99	48.03					
— 43.86	+ 0 0.29	+ 0 0.02	— 0 45.43	323 41 36.69	. .	2 35 23.86	+ 2 35 15.69	+ 8.26	+51.13		Jan.11		(M.)	179
										63.6	58.8	60.4	59.1	60.4
										63.5	58.2	60.0	59.4	60.2
										63.4	58.0	59.2	58.5	59.7
										64.0	58.6	49.5	59.8	60.4
										63.63	58.40	59.77	59.20	60.2
											Jan.11	Night.	(Ma.)	179
										62.2	62.5	62.6	66.6	63.2
										62.5	61.0	63.0	66.7	62.2
										62.0	59.8	61.8	65.5	63.0
										62.0	60.5	63.3	66.3	63.0
										62.5	60.4	62.4	66.0	62.8
										62.24	60.64	62.62	66.22	62.9

Objects.	COR. IN Æ.	Observed Semi-diam.	
	Semi-Diam.	Hor.	Vert.
	M. s.	M. s.	
Sun . .		1 10.54	
Jupiter .	— 0 1.67		
Sun . .	. .	1 10.66	
Sun . .	. .	1 10.87	
Sun . .	. .	1 10.42	

46 to 48. Clock cor. from preceding and following days.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean	CIRCLE & MICROMETER READINGS. A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°
Jan. 11	1	α Ceti	28.5	39.6	51.0	1.8	12.6	24 0	35.2	2 55 1.81	324 36 13.0	10.5	11.5	12.5	11.87	. .	30.116	28.5	22.4
	2	η Tauri	33.0	45.1	57.0	8.2	20.2	33	45.2	3 39 8.83	344 44 21.6	19.0	20.2	18.5	19.82	. .	30.118	27.8	21.6
	†3	γ¹ Eridani	4.5	15.5	26.8	39.0	49.8	1 0	12.8	3 51 38.49	307 10 41.8	37.4	42.0	43.3	41.11	d . .	30.130	26.8	21.1
	4	α Tauri	20.1	31.2	42.5	54.0	5.4	17	28.3	4 27 54.09	337 18 30.5	26.2	29.8	31.5	29.50	. .	30.150	27.0	21.4
	†5	α Orionis	5.5	16.5	27.5	38.5	49.6	0.7	11.8	5 47 38.60	328 29 15.0	12.6	12.5	15.0	13.78	. .	30.176	26.4	20.8
	6	51(Hev.) Cephei	42.0								48 20 55.2	41.0	44.8	48.5	47.38	. .	30.164	26.1	22.2
	7			31.5									46.4	31.8	34.8	40.0	38.25	. .			
	8				22.0								44.0	30.6	32.5	35.0	35.52	. .			
	†9					11.0				6 28 9.36			43.1	27.3	31.1	35.5	34.25	. .	30.156	26.0	22.5
	10						57.0						44.2	28.5	32.2	36.0	35.23	. .			
	11							17.0					48.0	31.6	35.3	41.0	38.97	. .			
	12								35.0				56.0	39.7	44.5	48.5	47.18	. .	30.166	26.0	22.5
	13	ε Canis Majoris	44.5	57.3	9.5	22.2	34.5	47.0	59.5	6 53 22.07	292 22 36.5	32.0	34.0	38.0	35.12	. .	30.176	26.0	22.8
	14	δ Geminorum	8.8	20.7	32.6	44.5	56.0	7.9	19.8	7 11 44.33	343 22 63.3	59.7	60.6	62.7	61.57	. .	30.192	25.8	21.8
	15	a^2 Geminorum	56.2	9.6	22.4	35.5	48.4	1.3	14.5	7 25 35.41	353 19 22.5	20.8	18.3	23.5	21.27	. .	30.196	25.5	20.8
	16	α Canis Minoris	29.6	40.8	51.8	2.9	13.7	24.8	35.8	7 52 2.77	326 43 36.0	32.2	37.0	41.1	36.57	. .	30.196	25.3	20.5
	17	β Geminorum	..	..	..	42.1	54.4	7.0	19.6	7 37 0.77	349 29 48.3	43.0	43.5	47.8	45.65	. .	30.196	25.3	20.7
12	18	Sun, 1st L. N. L.	50.8	2.9	15.0	26.2	38.2	50.3	2.0	19 34 26.49	299 44 22.5	22.2	22.2	20.9	21.95	. .	30.468	25.0	26.5
	19	Sun, 2d L. N. L.	11.6	23.8	35.8	47.2	58.8	10.8	22.9	19 36 47.26									
	20	α Cygni	9.5	25.1	40.2	55.5	11.0	26.5	41.4	20 36 55.60	5 50 36.4	29.2	26.0	33.7	31.32	. .	30.464	26.4	25.4
	†21	ϑ^1 Ceti	33.5	44.9	56.1	7.0	18.0	28.0	39.5	1 17 6.72	312 9 2.6	3.0	2.0	1.5	2.27	. .	30.504	28.0	21.0
	22	α Arietis	42.5	55.0	6.4	18.2	30.2	42.0	54.0	1 59 18.33	343 50 59.2	56.8	52.5	56.3	56.20	. .	30.506	26.5	18.4
	23	α Persei	20.8	38.2	54.8	11.6	28.0	45.2	2.8	3 14 11.63	10 24 62.7	62.2	55.2	60.2	60.07	. .	30.492	23.2	16.1
	24	η Tauri	34.1	45.5	57.4	9.2	21.0	33.8	45.0	3 39 9.43	344 44 19.9	23.2	17.9	18.6	19.90	. .	30.484	22.0	14.2
	25	Jupiter, 1st & N. L.	0.0	11.7	23.6	35.6	47.5	59.1	10.4	4 22 35.41	342 1 57.0	61.4	55.0	56.4	57.45	. .	30.482	20.0	13.2
	26	α Aurigæ	22.4	38.1	54.0	9.8	25.9	41.2	57.0	5 6 9.77	6 56 24.6	22.1	19.4	20.1	21.55	. .	30.492	18.2	13.0
	27	α Leporis	10.1	21.4	33.1	44.8	56.5	8.2	20.0	5 26 44.87	303 11 38.2	39.8	37.2	35.8	37.75	. .	30.488	18.4	13.1
	28	μ Geminorum	52.5	4.5	15.4	27.9	40.1	51.4	3.8	6 14 27.95	343 41 47.4	51.5	44.8	46.2	47.47	. .	30.480	18.0	12.2
	29	α Canis Majoris	36.1	47.5	59.1	10.1	21.4	32.7	44.1	6 39 10.14	304 37 7.5	12.6	11.2	10.6	10.47	. .	30.476	17.8	12.5
	30	δ Geminorum	8.8	21.0	33.1	44.8	57.0	8.8	20.2	7 11 44.82	343 22 4.2	9.3	5.6	6.2	6.32	. .	30.488	17.5	12.0
	31	a^2 Geminorum	57.0	9.8	22.6	34.9	47.8	1.0	13.7	7 25 35.26	353 19 27.2	29.9	22.9	27.2	26.80	. .	30.488	17.0	11.0
	32	15 Argus	12.0	23.9	35.8	47.9	59.9	12.1	24.1	8 1 47.96	297 16 20.0	20.1	18.5	20.0	19.65	. .	30.466	16.2	8.5
13	†33	Sun, 1st L.	10.7	22.5	34.5	46.0	57.8	9.2	21.7	19 38 46.13	. . . .	..	..	..	. .	. .	30.332	27.0	34.4
	34	Sun, 2d L.	31.2	43.0	55.0	6.9	18.3	30.2	42.1	19 41 6.67	. . . .	..	..	..	. .	. .			
14	35	ϑ^1 Ceti	33.9	45.0	56.0	7.3	18.1	29.4	40.5	1 17 7.19	312 8 54.3	57.0	53.8	56.0	55.27	. .	29.894	39.1	42.9
	36	α Arietis	43.0	55.0	7.0	18.5	30.5	42.6	54.3	4 59 18.70	343 50 57.8	60.0	52.0	56.8	56.65	. .	29.906	40.0	40.5
	37	α Persei	21.1	38.5	55.0	11.8	28.5	45.5	2.4	3 14 11.83	10 25 7.8	4.5	0.0	3.2	3.87	. .	29.918	39.7	35.5
	38	γ¹ Eridani	5.0	16.4	27.7	39.0	50.0	1.5	12.9	3 51 38.93	307 10 36.7	37.6	37.6	42.0	38.47	. .	29.918	39.0	36.0
	39	β Tauri	46.1	58.8	11.5	23.7	36.1	48.7	1.0	5 17 23.70	349 34 52.4	52.0	46.3	50.7	50.35	. .	20.920	37.7	33.8
	40	δ Orionis	24.6	35.4	46.3	57.4	8.2	19.1	30.1	5 24 57.30	320 41 58.4	61.6	57.5	58.8	59.07	. .	29.920	37.5	33.3
	41	α Columbæ	12.7	26.0	39.4	52.5	5.7	19.2	32.2	5 34 52.60	286 59 49.8	51.4	49.2	52.6	50.75	. .	29.924	37.2	33.0
	42	α Orionis	6.1	17.2	28.1	39.4	50.3	1.5	12.3	5 47 39.27	328 29 12.9	14.5	11.0	13.8	13.05	. .	29.924	37.0	32.8
	43	51(Hev.) Cephei		34.5							48 20 53.3	42.6	40.0	45.5	45.35	. .			
	44				23.0						48.5	38.0	37.0	42.4	41.47	. .			
	45					12.0				6 28 11.50	46.6	37.0	36.0	41.0	40.15	. .			
	46						59 5				48.4	38.7	38.0	43.0	42.02	. .			
	47							48.5			50.2	40.7	39.6	44.5	43.75	. .			
	48	ε Canis Majoris	45.4	57.9	10.6	22.7	35.1	48.0	0.5	6 53 22.93	292 22 29.0	29.2	30.5	33.3	30.50	. .	29.920	36 03	.3
	†49	δ Geminorum	..	..	33.1	5 0	57.0	8.9	20.5	7 11 56.90	343 22 1.3	3.8	1.5	3.7	2.57	. .	29.918	35.5	30.9
21	50	Sun, 2d & S. L.	43.4	55.3	7.4	19.0	30.0	42.0	53.9	20 15 18.71	300 56 21.4	27.6	28.4	28.1	26.37	. .	30.160	29.5	27.0
	†51	α Orionis	7.5	19.0	30.0	41.0	52.0	..	13.5	5 47 37.16	328 29 21.1	23.1	27.5	23.2	23.72	. .	30.229	28.3	19.9
	†52	α Canis Majoris	..	..	..	..	..	..	..	. . . .	304 37 12.7	19.6	19.6	18.4	17.57	. .	30.240	26.0	19.5

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At h.	Mic. coin. revs.
	h s.	s.	s.	s.	″	h.	revs.
Jan. 11,	7 f 43.70	g .017	— .043	+ .294	+0.03		
12,	5 44.13	.014			0.02		
13,	. .	.010					
14,	4 44.46	.009			+0.21		
21,	9 45.62	.008			—0.44		

1 rev. = 34″.406.

3. Wire IV recorded 40s.0.
21. Wire VII recorded 27s.5.

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN Æ. Clock.	COR. IN Æ. Inst.	COR. IN DEC. Inst.	COR. IN DEC. Object.	Corrected Reading.	Zenith Point. 359° 59′	OBSERVED R. A.	OBSERVED DEC.	REDUCTION TO 1850.0. R. A.	REDUCTION TO 1850.0. DEC.	NADIR POINT. A.	B.	C.	D.	Mea
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″		Jan. 12	Day.	(M.)	°
− 43.63	+ 0 0.28	+ 0 0.01	− 0 44.02	324 35 27.86	0.25	2 54 18.46	+ 3 29 6.86	+ 8.23	+48.56					179
43.64	.30	− .04	0 16.94	344 44 2.84	. .	3 38 25.49	+ 23 37 41.84	9.00	35.88	65″2	63″2	60″1	59″1	61″9
43.65	.32	+ .01	1 21.85	307 9 19.27	. .	3 50 55.16	− 13 57 1.73	7.09	44.11	64.8	63.0	60.4	58.9	61.7
43.66	.29	.03	0 26.00	337 18 3.53	. .	4 27 10.72	+ 16 11 42.53	8.57	28.96	65.2	63.4	60.5	59.2	62.0
43.68	.28	+ .09	− 0 38.20	328 28 35.66	2.93	5 46 55.20	+ 7 22 11.98	7.88	+14.05	64.2	63.4	59.6	58.5	61.4
. .	. .	− 12.51	+ 1 9.74	48 21 44.61	. .					65.0	63.0	60.4	58.8	61.8
										64.0	62.8	59.5	58.5	61.2
. .	. .	5.57	1 9.73	42.41	. .									
. .	. .	− 1.38	1 9.70	43.84	. .									
43.69	5.24	+ 0.05	1 9.68	43.98	. .	6 27 30.91	+ 87 15 20.15	60.67	− 2.61	64.73	63.13	60.08	58.83	61.6
. .	. .	− 1.24	1 9.69	43.68	. .									
. .	. .	5.27	1 9.70	43.40	. .									
. .	. .	− 12.02	+ 1 9.71	44.87	. .									
43.70	0.36	+ 0.18	− 2 29.81	292 20 5.49	. .	6 52 38.73	− 28 46 18.19	5.04	0.41					
43.70	.30	− .11	0 18.59	343 21 42.87	. .	7 11 0.93	+ 22 15 19.19	8.74	6.27					
43.71	.32	.15	0 7.30	353 19 13.82	. .	7 24 52.02	+ 32 12 50.14	9.35	9.57		Jan. 12	Night.	(M.)	179
43.71	+ .28	.18	0 40.94	326 42 55.45	. .	7 31 19.34	+ 5 36 36.26	7.52	13.72					
43.71	− 18.36	− .02	0 11.57	349 29 34.06	. .	7 35 58.70	+ 28 23 10.38	8.96	−11.66	64.5	70.5	61.1	63.5	64.9
										64.5	68.5	59.5	57.0	62.3
44.00	+ 0.33	+ .00	−17 57.87	299 26 24.09	1.69	19 34 53.20	− 21 39 58.35	. .	. .	63.6	67.2	58.8	59.9	62.3
										63.5	67.5	57.5	59.8	62.0
44.01	.38	.00	+ 0 6.38	5 50 37.70	. .	20 36 11.97	+ 44 44 15.26	7.17	+26.24	64.6	68.2	58.9	60.2	62.9
44.08	.32	.00	− 1 9.48	312 7 52.79	3.27	1 16 22.96	− 8 58 31.23	8.56	61.79	64.5	67.8	58.2	60.2	62.6
44.09	.30	+ .00	− 0 18.34	343 50 37.86	. .	1 58 34.54	+ 22 44 13.84	9.01	48.08	64.6	67.6	60.8	61.2	63.5
44.10	.41	− .01	+ 0 11.70	10 25 11.76	. .	3 13 27.94	+ 49 18 47.74	10.50	32.42	64.7	68.6	60.9	60.9	63.7
44.11	.30	− .01	− 0 17.43	344 44 2.46	. .	3 38 25.62	+ 23 37 38.44	9.09	35.89	65.0	68.5	61.0	61.4	63.9
										64.9	68.6	60.7	62.0	64.0
44.12	.30	+ .01	− 1 2.20	342 1 18.26	. .	4 21 53.23	+ 20 54 54.24	. .	. .					
44.13	.38	.00	+ 0 7.80	6 56 29.35	. .	5 5 26.02	+ 45 50 5.33	10.63	15.15	64.44	68.30	59.74	60.61	63.2
44.14	.33	.00	− 1 37.67	303 10 0.08	. .	5 26 1.06	− 17 56 23.94	6.24	23.13					
44.15	.30	+ .00	0 18.77	343 41 28.70	. .	6 13 44.10	+ 22 35 4.68	8.85	+ 5.68					
44.15	.33	− .01	1 32.67	304 35 37.79	. .	6 38 26.32	− 16 30 46.23	6.02	− 0.17					
44.16	.30	.01	0 19.18	343 21 47.13	. .	7 11 0.96	+ 22 15 23.11	8.73	6.27					
44.16	.32	.01	0 7.53	353 19 19.26	. .	7 24 51.42	+ 32 12 55.24	9.34	9.63					
44.17	.34	− .01	2 4.93	297 14 14.71	. .	8 1 4.13	− 23 52 9.31	5.60	−18.97					
44.16	.33	. .	. . .	. . .	. .	19 39 12.57					Jan. 14	Night.	(Ma.)	179
44.43	.32	+ .01	1 5.05	312 7 50.23	2.11	1 16 23.08	− 8 58 32.63	8.58	+61.92	59.5	59.0	66.7	64.8	62.5
44.44	.30	.00	− 0 17.16	343 50 39.49	. .	1 58 34.56	+ 22 44 16.63	9.04	48.08	59.8	59.0	67.2	64.5	62.6
										59.7	57.7	67.0	64.0	62.1
44.45	.41	− .07	+ 0 11.01	10 25 14.81	. .	3 13 27.79	+ 49 18 51.95	10.53	32.29	59.3	58.3	66.4	63.0	61.7
44.46	.32	− .11	− 1 18.73	307 9 19.63	. .	3 50 54.79	− 13 57 3.23	7.13	44.51	59.5	57.0	66.4	63.4	61.5
44.47	.31	+ .08	0 11.05	349 34 39.38	. .	5 16 39.54	+ 28 28 16.52	9.29	16.39					
44.47	.29	.00	0 49.21	320 41 9.86	. .	5 24 13.12	− 0 25 13.00	7.46	20.84	59.56	58.20	66.74	63.94	62.1
44.47	.39	.01	3 14.67	286 56 36.09	. .	5 34 8.52	− 34 9 46.77	4.73	23.43					
44.48	.28	+ .06	− 0 36.92	328 28 36.19	. .	5 46 55.07	+ 7 22 13.33	7.88	+14.29					
. .	. .	− 5.45	+ 1 7.73	48 21 47.63	. .									
. .	. .	− 1.33	1 7.73	47.87	. .									
44.48	4.90	+ 0.05	1 7.73	47.93	. .	6 27 31.92	+ 87 15 24.78	60.83	− 3.65					
. .	. .	− 1.21	1 7.73	48.54	. .									
. .	. .	5.24	+ 1 7.73	46.24	. .						Jan. 21		(M.)	180
44.49	+ 0.37	0.11	− 2 25.81	292 20 4.58	. .	6 52 38.81	− 28 46 18.29	5.03	+ 0.44	12.4	15.5	13.3	11.3	13.1
44.49	− 11.54	.07	− 0 18.06	343 21 44.44	. .	7 11 0.87	+ 22 15 21.58	8.72	− 6.26	12.2	18.6	14.7	14.3	14.9
45.52	+ 0.39	.0	+14 41.42	301 11 7.71	14.38	20 13 23.37	− 19 55 27.42	. .	. .	13.0	18.5	15.2	13.2	14.9
− 45.60	+ 0 3.95	.08	− 0 38.34	328 28 45.30	. .	5 46 55.51	+ 7 22 10.17	+ 7.91	+14.81					
. .	. . .	−0 0.13	− 1 30.54	304 30 46.90	. .	. . . .	− 16 30 48.23	. .	+ 1.77	12.53	17.53	14.40	12.93	14.3

Object.	COR. IN Æ. Semi-Diam.	Observed Semi-Diam. Hor.	Vert.
	m. s.	m. s.	
Sun . .	. .	1 10.38	
Jupiter .	+ 0 1.64		
Sun . .	. .	1 10.27	
Sun . .	− 1 9.43		

5, 9, 49. Blurred and unsteady.
33. Badly defined and very unsteady.
51. Interrupted by clouds.
52. Observed for dec. at wire VII.

DATE. 1847.	No for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer
			s.	s.	s.	s.	s.	s.	s.	H. M. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Jan. 21	1	δ Geminorum	11.0	23 1	35	47.0	58.2	10.2	22.1	7 11 46.67	343 22 6.6	12.7	13.1	10.0	10.60	. .	30.248	25.5	19.9	M
	2	15 Argus	12.8	25 0	37	49.0	1.0	12.9	25.0	8 1 48.69	297 16 14.5	17.5	21.0	19.1	18.03	. .	30.262	24.0	18.5	
	3	ι Hydræ	54.0	5.2	6 4	27.0	38.0	49.1	0.2	8 39 27.13	328 5 31.4	39.0	37.2	35.6	35.80	. .	30.262	23.5	17.3	
	†4	α Hydræ	..	..		..	..	..	..	. . .	313 7 34.0	40.0	41.3	38.2	38.37	. .	30.288	23.1	16.1	
	5	ε Leonis	20.5	32.5	44.5	56.6	9.0	21.2	33.0	9 37 56.76	345 35 8.7	14.5	13.5	10.4	11.77	. .	30.294	22.5	15.7	
	6	α Leonis	26.4	37.6	48.6	0.2	11.9	22.6	34.1	10 1 0.23	333 49 37.2	42.7	41.1	40.1	40.27*d*	. .	30.294	22.0	15.7	
	7	α Ursæ Majoris	..	..	37.5	1.2	25.5	49.1	12.5	10 55 25.16	23 40 16.3	17.9	17.8	15.6	16.90	. .	30.308	21.5	15.1	
	8	γ Ursæ Majoris	35.0	54.4	13.5	32.4	51.3	9.9	28.8	11 46 32.19	15 38 37.5	39.0	39.6	40.1	39.05	. .	30.314	21.5	14.4	
	†9	α Lyræ	48.0	2.1	16.0	30.1	44.0	58.0	12.0	18 32 30.03	359 45 17.6	21.6	18.0	17.1	18.57	. .	30.392	24.0	20.8	M
22	10	δ¹ Ceti	35.1	46.4	57.5	8.6	19.7	30.8	41.8	1 17 85.56	312 9 16.3	12.0	13.2	18.5	15.00	. .	30.252	24.0	28.0	
	11	Moon 1st & S. L.	..	..	6.8	18.5	29.7	41.1	52.1	1 24 29.64	329 13 19.8	25.1	24.5	23.8	23.30	. .	30.252	28.0	23.8	
	†12	γ¹ Arietis	20.3	32.3	43.4	54.9	6.5	18.0	29.7	1 45 55.01	339 39 26.0	34.0	31.0	32.0	30.75	. .	30.252	27.6	25.3	
	13	α Arietis	44.3	56.1	8.0	20.1	31.9	43.9	55.7	1 59 20.00	343 51 6.1	10.3	9.0	8.3	8.43	. .	30.254	27.3	23.2	
	†14	α Lyræ	48.4	2.4	16.3	31.1	44.6	58.5	13.0	18 32 30.62	359 45 17.4	23.3	19.2	17.5	19.35	. .	29.968	29.5	35.8	M
23	†15	Sun, 1st L.	51.2	3.0	14.7	26.4	38.2	50.1	2.0	20 21 26.51	. . . .	.	.	.	.	. .	29.930	34.0	41.4	
28	16	Sun, 1st L	40.7	52.6	4.0	15.4	27.0	38.7	50.0	20 42 15.49	. . . .	.	.	.	.	. .				Ma
	17	Sun, 2d L.	58.4	10.1	21.5	23.1	44.6	56.2	8.0	20 44 33.13	. . . .	.	.	.	.	. .				
31	†18	ε Canis Majoris	46.1	59.8	12.0	24.1	36.5	48.5	1.7	6 53 24.10	. . . .	.	.	.	.	. .	29.824	40.0	31.5	M
Feb. 1	19	Sun, 2d & N. L.	23.1	34.8	45.8	57.1	9 0	20.1	31.9	21 0 57.40	304 16 41.9	49.5	51.3	41.2	45.98	. .	29.878	42.0	43.8	
	†20	α Hydræ	19.4	30.6	41.2	52.5	3 4	14.5	25.6	9 20 52.46	313 7 31.0	39.5	41.0	34.4	36.47	. .	30.104	36.5	29.8	Ma
	21	o Leonis	..	25.0	36.0	47.1	58.0	9.5	20.7	9 33 52.72	331 42 6.5	15.0	12.3	6.5	10.07	. .	30.116	36.5	29.5	
	22	α Leonis	27.6	38.7	50.0	1.3	12.5	24.0	34.7	10 1 1.26	333 49 37.8	43.0	44.6	39.0	41.10	. .	30.128	36.0	29.2	
	23	Moon, 2d & S. L.	11.7	23.0	33.9	45.3	56.4	7.8	18.9	10 19 45.29	327 0 24.0	32.4	31.3	25.5	28.30	. .	30.136	36.0	29.2	
	†24	ρ Leonis	..	..	22.3	33.3	44.5	55.5	6.7	10 25 44.46	331 12 29.2	36.9	36.0	30.5	33.15	. .	30.138	36.0	29.1	
	†25	o¹ Sextantis	22.5	33.6	44.7	55.7	6.8	18.0	28.9	10 38 55.74	328 17 43.0	50.8	49.5	44.8	47.03	. .	30.145	35.4	28.9	
	26	α Ursæ Majoris	51.1	15.8	39.7	2.8	26.6	50.7	14.4	10 55 3.02	. . . .	.	.	.	.	. .	30.144	35.5	28.6	
	†27	δ Leonis	10.7	22.5	34.3	45.6	57.7	9.5	21.2	11 6 45.93	342 28 18.8	28.2	25.0	21.5	23.37	. .	30.144	35.3	28.4	
	28	δ Hydræ et Crateris	..	7.7	18.7	30.0	41.0	52.4	3.8	11 12 35.60	307 10 46.7	53.7	55.2	48.0	50.90	. .	30.144	35.3	28.0	
4	29	α Arietis	43.8	55.7	7.8	20.0	31.9	43.8	55.6	1 59 19.80	343 51 12.2	19.8	18.0	11.7	15.42	. .	29.894	44.2	33.3	M.
	†30	γ Ceti	35.4	46.7	57.0	8.3	19.0	29.7	40.0	2 36 8.01	323 42 34.2	41.3	42.2	37.2	38.72	. .	29.916	41.8	32.4	
	31	α Ceti	30.8	41.5	52.4	3.5	14.2	24.8	36.0	2 55 3.31	324 36 25.0	35.2	32.5	28.2	30.22	. .	29.920	40.7	30.8	
	32	α Persei	21.7	38.8	55.6	12.0	28.6	44.7	2.4	3 14 11.97	10 25 18.4	22.0	18.0	17.1	18.87	. .	29.920	39.5	30.0	
	33	η Tauri	34.5	46.3	57.9	10.0	21.9	34.0	46.1	3 39 10.10	344 44 35.1	42.3	39.4	35.0	37.95	. .	29.930	37.2	30.9	
	34	γ¹ Eridani	6.0	17.1	28.4	39.8	51.0	2.2	13.7	3 51 39.74	307 10 52.4	60.7	61.7	54.8	57.40	. .	29.936	37.0	30.0	
	35	α Aurigæ	23.6	39.8	55.0	10.2	26.1	42.6	57.9	5 6 10.74	. . . .	.	.	.	.	. .	29.934	35.2	29.4	
	36	δ Orionis	25.2	36.1	47.2	58.0	9.0	20.1	31.0	5 24 58.09	320 42 10.4	18.5	17.0	13.4	14.83	. .	29.938	35.0	28.8	
	37	α Orionis	7.0	18.0	29.0	40.0	51.0	2.2	13.0	5 47 40.03	328 29 26.5	32.2	29.2	25.4	28.32	. .	29.928	34.5	29.2	
	38	ε Hydræ	54.6	5.6	16.5	27.2	38.2	49.4	0.2	8 39 27.39	328 5 32.6	38.4	40.1	34.2	36.32	. .	29.968	39.0	25.0	
	39	ι Ursæ Majoris	40.2	57.0	13.7	30.3	46.6	2.8	19.4	8 49 30.00	9 44 34.5	35.0	34.6	31.2	33.82	. .	29.968	37.5	24.7	
	40	α Hydræ	18.1	29.1	40.2	51.3	2.1	13.3	24.8	9 20 51.27	313 7 35.6	41.6	42.0	41.7	40.22	. .	29.962	36.2	24.5	
	41	ε Leonis	20.5	32.6	45.6	57.4	9.3	21.3	33.2	9 37 57.13	345 35 12.1	19.8	15.7	12.6	15.05	. .	29.956	35.2	26.7	
	42	α Leonis	26.8	38.1	49.4	0.8	12.0	23.4	34.8	10 1 0.76	333 49 39.6	46.2	45.7	41.0	43.12	. .	29.962	33.7	25.9	
	43	α Ursæ Majoris	50.0	14.8	38.5	2.0	25.4	49.4	13.5	10 55 1.94	23 40 29.6	27.4	27.0	24.1	27.01*d*	. .	29.976	32.5	26.7	
	44	δ Hydræ et Crateris	55.0	6.4	17.8	29.1	40.6	51.8	3.4	11 12 29.16	307 10 39.2	48.6	48.3	41.3	44.35	. .	29.968	32.2	26.5	
5	45	Sun, 1st L.	18.0	29.1	40.6	52.1	3.2	15.0	26.3	21 14 52.04	. . . .	.	.	.	.	. .	29.940	36.0	38.6	
	46	α Ceti	30.6	41.3	52.4	3.8	14.8	25.9	36.6	2 55 3.63	324 36 30.0	30.2	28.2	26.8	26.30	. .	29.886	39.5	35.2	
	47	α Persei	22.8	39.7	56.2	13.0	30.0	47.0	3.6	3 14 13.19	10 25 17.2	18.5	17.2	16.5	17.35	. .	29.890	39.0	33.0	
	†48	α Tauri	21.5	32.8	44.1	56.0	8.0	19.0	30.0	4 27 55.92	337 18 47.4	53.3	53.6	51.2	51.37	. .	29.880	37.7	30.1	
	†49	12 Canum. Ven.	..	..	..	38.9	52.8	7.0	21.0	12 48 59.92	. . . .	.	.	.	.	. .				Ma.
	†50	Polaris, S P.	..	..	..	55.5	58.5	6.0	..	.. 13 5 0.00	. . . .	.	.	.	.	. .				
	51	α Virginis	21.9	33.0	44.3	55.1	6.3	17.7	28.9	13 18 55.31	. . . .	.	.	.	.	. .	29.896	32.0	28.0	
	52	Moon, 2d L.	35.6	35.6	46.8	58.0	9.3	20.8	32.1	13 26 3.76	. . . .	.	.	.	.	. .			27.9	

DATE.	Clock +m.	Hourly Rate.	value of n.	value of c.	Error of Runs.	Mic. coin. At	Mic. coin.	1 rev. = 34″.406.
	h. s.	s.	s.	s.	″	h.	revs.	
Jan. 22, 2	*f* 45.92	*g* .007	—0.212	+0.294	—0.49			2. Wires VI, VII recorded 11s.9, 24s.0.
23,		.006						11. Wire V recorded 46s.6.
28,		.002						
31, 7	45.78	.002						
Feb. 1, 10	46.65	.000			.77	4	40.201	
2, 2	46.40	.002						
4, 6	45.42	.006			.57			
5, 4	46.00	.009			—0.82	12	40.199	Assumed Latitude 38° 53′ 39″.25 North.

COR. IN Æ.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850 0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		0° 0′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D	M
s.	M s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″		Jan. 22	23h.	(M.)	°
— 45.61	+ 0 0.24	+ 0 0.17	— 0 18.71	343 21 52.06	14.38	7 11 1.30	+ 22 15 16.93	+ 8.68	— 6.27					180
45.61	.42	+ .19	2 1.39	297 14 16.82	. .	8 1 3.31	— 23 52 18.31	5.53	16.49	11″7	18″8	13″8	11″6	13″
45.62	.27	— .06	0 38.48	328 4 57.26	. .	8 38 41.78	+ 6 58 22.13	7.60	24.28	11.2	18.1	12.7	11.5	13.
. .	.33	+ .23	1 7.41	313 6 31.19	. .	. . . .	— 8 0 3.94	. .	33.74	11.6	18.8	13.9	11.8	14.
45.63	.23	— .12	0 16.10	345 34 55.38	. .	9 37 11.36	+ 24 28 20.25	8.43	32.96					
45.63 +	.25	+ .02	— 0 31.10	333 49 9.19	. .	10 0 14.85	+ 12 42 34.06	7.85	37.54	11.50	18.57	13.47	11.63	13.
45.64 —	23.54	— .18	+ 0 27.78	23 40 44.50	. .	10 54 15.98	+ 62 34 9.37	9.54	37.02					
45.64 +	0.21	— .05	+ 0 17.78	15 38 56.78	. .	11 45 46.76	+ 54 32 21.65	8.47	— 39.06					
45.70 +	.21	+ .11	— 0 0.26	359 45 18.42	. .	18 31 44.54	+ 38 38 43.29	7.17	+ 7.90		Feb. 1.	23h.	(M.)	180
45.92 +	.33	— .05	— 1 7.91	312 8 7.04	14.42	1 16 22.97	— 8 58 28.13	8.69	62.37					
45.92 —	11.09	.00	+45 17.59	329 58 40.89	. .	1 24 40.03	+ 8 52 5.77	. .	. .	14.2	23.2	18.4	6.2	15.
45.92 +	0.24	.10	— 0 22.95	339 39 7.70	. .	1 45 9.33	+ 18 32 32.53	9.02	51.76	14.3	22.7	18.1	6.4	15.
										14.5	22.8	18.0	6.3	15.
45.92	.23	— .03	0 18.01	343 50 50.38	. .	1 58 34.31	+ 22 44 15.21	9.16	48.71	14.6	22.3	17.9	6.3	15.
45.93	.21	+ .17	0 0.26	359 45 19.26	13.82	18 31 44.90	+ 38 38 44.69	7.15	+ 8.19	14.5	22.2	18.0	6.4	15.
45.93	.39	.	. . .	. . . .	. .	20 21 50.19	. . . .	. .	. .	14.7	22.0	18.0	6.5	15.
										14.9	22.7	17.7	5.9	15.
45.77	.38	.	. . .	. . . .	. .	20 42 38.92	. . . .	. .	. .	14.8	32.9	17.9	6.2	15.
. .	.45	.	. . .	. . . .	. .	. . . .	. . . .	5.09	. .	14.2	22.5	17.5	6.1	15.
										14.4	22.3	17.8	5.9	15.
46.65	.38	— .50	17 33.73	303 59 11.74	15.33	20 59 2.92	— 17 7 24.34	. .	. .					
46.65 +	.33	+ .41	1 5.03	313 6 31.85	16.54	9 20 6.14	— 8 0 5.44	6.83	— 31.63	14.51	22.56	17.93	6.22	15.
46.65 —	5.32	.04	0 32.86	331 41 37.25	. .	9 33 0.75	+ 10 34 59.96	8.66	30.15					
46.65 +	0.25	.42	— 0 30.03	333 40 11.49	. .	10 0 14.86	+ 12 42 34.20	7.67	36.66					
46.65 +	.27	.12	+43 18.25	327 43 46.67	. .	10 17 57.29	+ 6 37 9.38	. .	. .					
46.65 —	10.87	+ .13	— 0 33.60	331 11 59.68	. .	10 24 46.94	+ 10 5 22.39	7.62	40.15		Feb. 1.	Night.	(Ma.)	180
46.65 +	0.27	— .05	0 37.78	328 17 9.20	. .	10 38 9.36	+ 7 10 31.91	7.53	42.06					
46.65 +	.23	.	. . .	. . . .	. .	10 54 16.60	. . . .	9.09	38.68	11.0	17.7	22.0	15.2	16.
46.65 +	.24	+ .35	0 19.35	342 28 4.37	. .	11 5 59.52	+ 21 21 27.08	7.92	42.74	11.5	17.3	22.7	14.2	16.
										11.0	18.0	21.5	14.5	16.
46.65 —	5.29	— .30	1 20.67	307 9 29.93	. .	11 11 43.66	— 13 57 7.36	7.03	— 49.13	12.0	18.0	21.8	15.1	16.
45.39 +	0.23	+ .05	0 17.40	343 50 58.07	22.23	1 58 34.64	+ 22 45 15.09	9.36	+ 49.74	11.0	17.9	22.1	15.1	16.
45.40	.28	.13	0 44.22	323 41 54.63	. .	2 35 22.89	+ 2 35 11.65	8.59	52.75					
45.40	.28	.10	— 0 42.93	324 35 47.39	. .	2 54 18.19	+ 3 29 4.41	8.56	50.15	11.30	17.78	22.02	14.82	16.
45.40	.20	+ .25	+ 0 11.13	10 25 30.25	. .	3 13 26.77	+ 49 18 47.27	11.02	31.88					
45.40	.23	— .08	— 0 16.50	344 44 21.37	. .	3 38 24.93	+ 23 37 38.29	9.33	36.39					
45.41	.36	— .20	1 19.77	307 9 37.43	. .	3 50 54.69	— 13 57 5.55	7.42	46.60		Feb. 4.		(M.)	180
45.41	.20	.	. . .	. . . .	. .	5 5 25.53	. . . .	10.98	. .					
45.42	.29	+ .04	0 49.71	320 41 25.15	. .	5 24 12.96	— 0 25 17.83	7.63	22.87	18.9	28.5	21.5	18.2	21.
										20.1	28.4	23.2	18.6	22.
45.42	.27	— .09	0 37.21	328 28 51.02	. .	5 46 54.88	+ 7 22 8.04	8.01	+ 15.66	21.7	28.1	22.7	18.6	22.
45.43	.27	.07	— 0 38.16	328 4 58.09	. .	8 38 42.23	+ 6 58 15.11	7.49	— 23.01	20.8	27.2	22.4	17.9	22.
45.43	.20	.07	+ 0 10.53	9 44 44.36	. .	8 48 44.77	+ 48 38 1.28	9.86	27.91	20.0	27.0	21.5	18.3	21.
45.44	.33	.25	— 1 5.42	313 6 34.55	. .	9 20 6.16	— 8 0 8.43	6.83	31.15					
45.44	.23	.14	0 15.70	345 34 59.21	. .	9 37 11.92	+ 24 28 16.23	8.22	32.98	20.30	27.84	22.26	18.32	22.
45.44	.25	— .24	— 0 30.07	333 49 12.81	. .	10 0 15.57	+ 12 42 29.83	7.63	36.48					
45.45	.23	+ .01	+ 0 26.79	23 40 53.81	. .	10 54 16.72	+ 62 34 11.83	8.99	39.23					
45.45	.36	— .24	— 1 20.48	307 9 23.63	. .	11 11 44.07	— 13 57 19.35	6.98	— 48.47					
45.94	.37	.	. . .	. . . .	. .	21 15 14.22	. . . .	. .	. .		Feb. 5.		(M.)	180
46.00	.28	+ .12	— 0 42.51	324 35 43.91	20.38	2 54 17.91	+ 3 29 2.78	8.57	+ 50.21					
46.00	.20	.34	+ 0 11.05	10 25 28.74	. .	3 13 27.39	+ 49 18 47.61	11.05	31.90	19.0	24.2	22.0	17.3	20.
+ 46.01 +	.25	+ 0 0.23	— 0 25.29	337 18 26.31	. .	4 27 10.16	+ 16 11 45.18	8.84	29.71	18.4	23.6	21.9	16.8	20.
										18.2	23.9	22.2	16.8	20.
— 46.08 —	20.99	. . .	. . .	. . . .	. .	12 47 52.85	. . . .	7.29	. .	18.2	23.8	21.4	16.7	20.
46.09 —	3.58	. . .	. . .	. . . .	. .	13 4 10.33	. . . .	49.98	. .	18.2	23.8	22.8	16.5	20.
46.09 +	0.34	. . .	. . .	. . . .	. .	13 18 9.56	. . . .	+ 7.98	+ 52.16					
— 45.94	— 0 5.35	. . .	. . .	. . . .	. .	13 24 10.27	. . . .	. .	. .	18.40	23.86	22.06	16.82	20.

Objects.	COR. IN Æ.	Observed Semi-diam.	
	Semi-diam.	Hor.	Vert.
	M. s.	M. s.	
Moon .	— 0 7.38		
Sun . .	+ 1 9.22		
Sun . .	. . .	1 8.82	
Sun . .	— 1 8.21		
Moon .	— 1 1.62		
Sun . .	+ 1 7.75		
Moon .	— 1 2.20		

4. Obs'd for Dec. at wire VII.
9, 15, 27, 49. Very unsteady. 49. Obs'n very poor.
14. Tremulous ; clouds rising.
18. Through clouds.
20, 24. Blurred and unsteady.
25. Very indifferent.
30. Div. under Mic. D very indistinct.
48. Obs'n of transit unsatisfactory.
50. Div. under Mic. A very indistinct.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Feb. 5	1	α Cygni	11.8	27.2	42.8	58.7	13.1	28.9	44.6	20 26 58.13	5 50 48.6	48.0	45.6	47.8	47.50	. .	29.960	38.2	37.8	M.
6	2	Sun, 1st L. } N. L.	19.0	30.3	41.8	52.9	4.2	15.9	27.7	21 18 53.11	305 45 38.2	44.0	47.2	40.9	42.5	. .	29.950	39.5	43.0	
	3	Sun, 2d L. }	34.4	45.9	57.5	8.8	20.0	31.3	43.0	21 21 8.70										
	4	α Andromedæ	37.5	50.0	2.6	15.1	27.5	40.1	52.6	0 1 15.06	349 21 40.5	44.6	43.6	38.0	41.67	. .	29.940	41.5	43.7	
	5	α Arietis	44.5	56.1	8.0	19.6	31.4	43.3	55.0	1 59 19.70	343 51 9.7	15.3	14.9	11.5	12.85	. .	29.956	41.5	43.7	
	6	γ Ceti	36.6	47.1	57.9	9.1	19.9	30.4	41.0	2 36 8.86	323 42 28.4	35.5	36.3	39.8	32.75	. .	29.960	41.0	38.6	
	†7	α Ceti	..	42.0	..	5.0	16.0	27.0	..	2 55 7.50	324 36 19.6	29.2	31.2	25.2	26.30	. .	29.966	40.5	37.9	
	8	α Persei	22.6	39.6	56.1	13.2	30.1	47.0	3.4	3 14 13.14	10 25 17.6	18.5	18.3	17.6	18.00	. .	29.974	40.1	38.9	
9	9	51(Hev.) Cephei				14.8					48 21 5.7	1.3	4.7	3.5	3.80	. .				
	10						59.7			6 32 1.77		9.2	4.8	7.6	7.8	7.35	. .	29.682	37.3	28.0
	11							50.8				14.3	9.6	12.2	12.8	12.22	. .			
11	12	δ Orionis	27.9	39.0	49.9	1.0	11.8	23.0	33.8	5 25 0.91	320 42 9.4	13.8	15.7	13.0	12.97	. .	30.088	39.8	32.0	Ma.
	13	α Orionis	9.8	21.0	31.3	42.8	54.0	5.0	15.9	5 47 42.91	328 29 23.6	28.6	30.2	29.0	27.85	. .	30.085	38.8	32.0	
	†14	μ Geminorum	..	..	20.2	32.0	44.0	55.7	7.6	6 14 43.90	343 41 57.0	62.7	64.2	62.0	61.47	. .	30.090	37.0	30.0	
	15	α Canis Majoris	39.7	51.0	2.6	13.9	25.5	36.9	48.0	6 39 13.94	304 37 8.7	13.5	19.1	17.5	14.70	. .	30.088	36.2	29.7	
	16	ε Canis Majoris	48.9	1.5	14.0	26.5	38.9	51.4	3.8	6 53 26.43	292 22 36.0	41.9	46.0	44.0	41.97	. .	30.086	36.0	29.2	
	17	α Canis Minoris	34.0	45.3	56.4	7.5	18.3	29.5	40.3	7 32 7.33	336 43 47.3	53.0	54.3	52.0	51.65	. .	30.080	35.0	28.1	
12	†18	α Ceti	33.0	44.5	55.0	5.8	16.0	27.0	38.7	2 56 5.71	324 36 25.8	34.0	36.6	31.6	32.00	. .	30.000	37.0	31.8	M.
	19	α Persei	25.1	41.5	58.8	15.6	31.8	48.9	5.4	3 14 15.30	10 25 15.2	15.8	17.2	17.2	16.35	. .	30.008	36.2	30.1	
	20	α Orionis	10.0	21.1	31.5	43.0	54.1	5.2	16.0	5 47 42.99	328 29 25.0	30.5	32.7	31.8	30.00	. .	30.116	36.5	28.5	
	†21	α Aquilæ	34.2	45.3	56.0	7.2	18.0	29.8	40.1	19 44 7.23	329 35 22.4	27.1	28.7	24.9	25.77	. .	30.150	35.2	29.3	
15	22	Sun, 1st L. } S. L.	56.2	8.0	18.6	30.0	40.8	52.9	3.8	21 54 30.04	308 9 11.5	16.5	20.2	14.4	15.65	. .	29.960	43.8	47.0	
	23	Sun, 2d L. }	9.8	20.9	32.0	43.9	54.8	6.1	17.6	21 56 43.59										
22	†24	α Canis Minoris	34.6	45.9	57.0	8.0	18.5	30.0	40.8	7 32 7.83	326 43 26.2	29.5	32.2	34.5	30.60d	. .	29.792	41.8	37.3	
	†25	15 Argus	..	..	..	..	..	..	..	. . . .	297 15 50.0	51.2	57.8	61.5	55.12	. .	29.820	40.5	34.5	
	26	ι Ursæ Majoris	44.1	..	16.9	33.8	51.0	7.3	23.8	8 49 39.48	9 44 16.8	12.8	15.8	17.6	15.75	. .	29.823	40.5	35.9	
	27	α Hydræ	21.0	33.0	43.9	54.8	6.0	17.0	28.5	9 20 54.90	313 7 8.2	12.2	15.2	15.9	12.87	. .	29.830	40.0	34.5	
	†28	ε Leonis	23.8	36.8	48.5	0.0	12.0	24.9	36.4	9 38 0.35	345 34 52.2	54.7	57.5	58.5	55.72	. .	29.841	39.5	34.1	
	29	α Leonis	29.8	41.7	52.9	3.5	15.6	25.9	37.8	10 1 3.89	333 49 15.7	19.0	21.2	23.8	19.92	. .	29.858	39.0	34.0	
23	30	Sun, 1st L.	42.3	53.8	5.0	15.9	27.1	38.1	49.8	22 25 16.00	. . . .	.	.	.	.	. .	30.247	35.5	34.0	
	31	Sun, 2d L.	53.8	5.8	16.0	27.7	38.9	50.0	1.2	22 27 27.63	. . . .	.	.	.	.	. .				
	32	Polaris		43.5							49 34 73.8	64.8	71.2	73.0	70.70	. .				
	33				35.0						67.0	56.4	65.2	66.4	43.75	. .	30.243	38.2	33.9	
	34					46.0				1 3 12.88	63.0	54.2	63.2	63.1	60.87	. .				
	35							41.0			71.8	63.5	69.2	72.6	69.28	. .				
	†36	γ¹ Eridani	8.7	19.5	30.0	42.7	54.0	6.2	17.4	3 51 42.69	307 10 28.5	30.9	35.2	36.4	32.75d	. .	30.282	38.2	31.9	
	37	Jupiter, 1st & N. L.	23.0	34.2	45.9	57.9	8.7	20.7	32.7	4 23 57.59	342 14 9.8	12.7	13.2	16.7	13.10	. .	30.288	37.0	30.5	
	38	Eridani, 1545	4.7	16.0	27.9	38.9	49.9	1.2	13.0	4 53 38.80	308 21 10.9	12.5	17.6	20.5	15.38	. .	30.296	36.2	30.0	
	39	β Orionis	27.5	38.6	50.1	1.2	12.3	23.8	35.0	5 8 1.22	312 44 9.5	12.1	16.8	16.4	13.70	. .	30.301	31.0	29.8	
	†40	δ Orionis	28.4	40.0	51.0	1.4	12.9	23.8	34.6	5 25 1.73	320 41 46.0	47.7	53.0	54.7	50.35	. .	30.314	35.4	29.0	
24	41	Sun, 1st L. } N. L.	31.0	41.8	52.7	4.1	14.7	26.2	37.4	22 29 3.99	311 53 58.0	62.2	69.0	65.2	63.60	. .	30.396	33.5	34.2	
	42	Sun, 2d L. }	42.4	54.0	5.0	15.8	27.5	38.2	49.0	22 31 15.99										
Mar. 1	43	Sun, 1st L.	..	32.8	43.9	54.8	5.9	17.0	..	22 47 54.86	. . . .	.	.	.	.	. .				
	44	Sun, 2d L.	32.4	43.7	54.6	5.7	16.8	27.9	39.0	22 50 5.73	. . . .	.	.	.	.	. .				
	45	15 Argus	17.5	29.6	40.8	52.9	4.4	16.6	28.8	8 1 52.95	297 15 52.3	51.5	58.4	57.0	54.80	. .	30.052	39.0	35.0	
	†46	ε Hydræ	58.6	9.4	20.9	32.0	43.4	53.8	5.0	8 39 31.87	328 5 13.5	17.9	19.2	19.9	17.62	. .	30.052	38.5	34.8	
	†47	ϑ Ursæ Majoris	34.2	52.1	10.2	28.0	44.9	4.0	21.0	9 23 27.77	13 28 16.8	14.3	15.7	19.0	16.45	. .	30.056	38.0	34.7	
	48	ε Leonis	24.9	37.2	49.0	1.2	13.0	24.9	37.8	9 38 1.15	345 34 56.5	57.5	59.8	61.2	58.75	. .	30.054	37.5	33.3	
	49	α Leonis	31.8	43.0	53.8	4.9	16.2	27.9	38.8	10 1 5.22	333 49 19.0	20.6	22.6	21.2	20.85	. .	30.054	37.5	33.1	
	50	δ Leonis	13.8	26.0	37.9	50.0	1.0	12.7	25.0	11 6 49.49	342 28 0.0	5.6	7.5	8.0	5.27	. .	30.060	37.0	32.8	
	†51	γ Ursæ Majoris	40.9	0.2	19.4	37.5	56.0	15.0	34.1	11 46 37.59	14 58 50.6	25.2	29.8	30.6	29.05	. .	30.079	37.8	32.8	
	52	Canum Venat. 4345	0.0	14.2	27.8	42.5	56.1	10.5	24.6	12 49 42.24	0 14 34.2	33.2	33.0	37.6	34.50	. .	30.088	36.0	30.9	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.
	h.	s.	s.	s.	″	h.	revs.
Feb. 6, 2	f 45.86 g	.011	—0.212	—0.290	—0.94		
9,		.016					
11. 6	48.20	.016			.58	7	40.193
12, 4	48.27	.014			.58		
22. 9	48.91	.008			.37		
23, 5	49.12	.010			—.31	7	40.208
24,		.011					
1, 9	49.93	.012					

1 rev. = 34″.406.

28. Wire IV recorded 1s.0.
52. Wire VII recorded 23s.6.

Assumed Latitude 38° 53′ 39″.25 North.

No. for ref.	COR. IN R. Clock.	COR. IN R. Inst.	COR. IN DEC. Inst.	COR. IN DEC. Object.	Corrected Reading.	Zenith Point. 359° 59′	OBSERVED R. A.	OBSERVED DEC.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 DEC.	NADIR POINT. A.	B.	C.	D.	Mean.
	s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					° ′
1	— 45.91	+ 0 0.21	— 0 0.46	+ 0 6.11	5 50 53.55	78.52	20 36 12.43	+ 44 44 14.28	+ 7.07	+33.66		Feb. 6		(M.)	**180 0**
2											17″2	22″6	19″8	15″6	18″80
3	45.82	.37	+ .22	—17 28.83	305 28 13.86	. .	21 19 15.45	— 15 38 25.41	. .	. .	17.4	22.7	19.9	15.8	18.95
4	45.84	.22	.22	0 11.08	349 21 30.81	. .	0 0 29.44	+ 28 14 51.41	9.20	53.32	17.2	22.0	19.8	14.6	18.40
5	45.86	.23	.03	0 17.08	343 50 55.80	. .	1 58 34.07	+ 22 14 16.53	9.39	49.90	17.1	22.2	19.4	14.7	18.35
6	45.87 +	.28	.17	0 43.74	323 41 49.18	. .	2 36 23.27	+ 2 35 9.91	8.39	52.85	16.8	21.7	19.6	14.6	18.17
											17.0	21.6	19.5	14.6	18.18
7	45.87 —	2.48	.14	0 42.39	324 35 44.05	. .	2 54 19.15	+ 3 29 4.78	8.58	50.26	17.2	22.0	19.8	14.8	18.45
8	45.87 +	0.20	.41 —	0 10.97	10 25 10.86	. .	3 13 27.47	+ 49 18 50.11	11.07	+31.90	17.1	22.2	19.7	14.7	18.43
9	. .	. . . +	.03 +	1 7.72	48 21 11.55	}					17.1	22.0	19.4	14.2	18.17
10	47.20 —	3 47.48 —	1.24	1 7.72	13.83	} 79.78	6 27 27.09	+ 87 15 32.74	65.40	—10.02	17.0	21.8	19.5	14.0	18.07
11	. .	. . .	5.33 +	1 7.72	14.61	}					17.11	22.18	19.64	14.76	18.42
12	48.18 +	0.29	.04 —	0 49.61	320 41 23.32	78.21	5 24 13.02	— 0 25 15.64	7.72	+23.38					
13	48.19 +	.27 —	.10	0 37.17	328 28 50.58	. .	5 46 54.99	+ 7 22 11.62	8.09	16.00		Feb. 9	Night.	(M.)	**180 0**
14	48.20 —	11.64	.00	0 17.82	343 41 43.65	. .	6 13 44.06	+ 22 35 4.69	8.99	5.35					
15	48.20 +	0.37 +	.24	1 28.11	304 35 46.83	. .	6 38 26.11	— 16 30 52.23	6.19	5.48	18.1	23.5	22.1	17.5	20.30
											17.7	23.2	22.0	61.8	19.93
16	48.21	.45 —	.33	2 27.27	292 20 14.37	. .	6 52 38.67	— 28 46 24.59	5.20	+ 7.12	16.5	22.6	21.4	61.2	19.17
17	48.22	.27 —	.22	0 40.11	326 43 11.32	. .	7 31 19.38	+ 5 36 32.36	7.45	—10.88	16.8	23.3	21.0	16.5	19.40
18	48.25	.28 +	.10 —	0 42.98	324 35 49.12	78.23	2 55 17.74	+ 3 29 10.14	8.69	+50.57	17.27	23.15	21.62	16.75	19.70
19	48.26	.20 +	.24 +	0 11.17	10 25 27.76	. .	3 13 27.24	+ 49 18 48.78	11.23	32.15					
20	48.30	.27 —	.09 —	0 37.49	328 28 52.42	. .	5 46 54.96	+ 7 22 13.44	8.11	16.05					
21	48.49	.26 —	.11 —	0 35.88	329 34 49.78	78.87	19 43 19.00	+ 8 28 10.16	9.13	+25.14		Feb.11		(Ma.)	**180 0**
22											15.1	21.5	20.1	15.1	17.95
23	. .	.35 +	.11	+15 4.67	308 24 20.43	76.51	. . . .	— 12 42 16.83	. .	. .	15.5	21.1	20.2	15.1	17.97
24	48.90	.27	.09 —	0 38.97	326 42 51.63	60.42	7 31 19.20	+ 5 36 30.46	7.55	—10.29	15.5	20.9	20.3	15.1	17.97
25	. .	. . . +	.11 —	1 55.56	297 13 59.67	. .	. . . .	— 23 52 21.50	. .	9.20	15.6	21.6	20.6	15.9	18.43
26	48.91 —	5.30 —	.09 +	0 10.23	9 44 25.89	. .	8 48 45.27	+ 48 38 4.72	9.85	31.13	15.8	21.5	20.7	15.8	18.45
27	48.91 +	0.33 +	.15 —	1 3.81	313 6 9.21	. .	9 20 6.32	— 8 0 11.96	6.67	28.33	15.50	21.32	20.38	15.40	18.15
28	48.92	.23 —	.13	0 15.40	345 34 40.19	. .	9 37 11.66	+ 24 28 19.02	8.10	33.73					
29	48.92	.25 +	.16 —	0 29.46	333 48 50.62	. .	10 0 15.22	+ 12 42 29.45	7.48	—35.87		Feb.12		(M.)	**180 0**
30	49.02	.34	. . .	. . .	. . . .	. .	22 25 33.13	. . . .	. .	. .	15.0	21.6	20.1	15.0	17.92
31											15.6	21.0	20.3	15.2	18.03
32	. .	. . . —	10.34 +	1 11.17	49 36 11.53	}					15.5	20.9	20.2	15.1	17.92
33	. .	+ 96.92	2.95	1 11.16	11.96	}					15.7	21.5	20.7	15.8	18.43
34	49.08	. . .	.26	1 11.16	11.77	} 56.66	1 4 0.72	+ 88 29 53.96	61.08	+41.56	15.8	21.7	20.8	15.9	18.55
35	. .	. . .	10.21 +	1 11.17	10.24	}					15.52	21.34	20.42	15.40	18.17
36	49.11	0.36	.00 —	1 20.37	307 9 12.38	. .	3 50 53.84	— 13 57 5.03	7.76	47.63					
37	49.12	.24 —	.08	0 37.82	342 13 35.20	. .	4 23 10.15	+ 21 7 17.79	. .	. .		Feb.12	Night.	(M.)	**180 0**
38	49.12	.35 +	.02	1 17.38	308 19 58.02	. .	4 52 50.03	— 12 46 19.39	7.33	35.04	16.0	22.3	21.0	17.0	19.08
39	49.12	.33 —	.08	1 6.34	312 43 7.28	. .	5 7 12.43	— 8 23 10.13	7.51	30.54	15.5	22.0	20.5	17.4	18.85
											15.8	22.0	21.0	18.5	18.83
40	49.13	.29 —	.01	0 50.31	320 41 0.03	. .	5 24 12.89	— 0 25 17.38	7.91	+24.04	15.4	21.3	20.0	17.2	18.47
41															
42	49.30	.34 —	.00	17 11.88	311 36 51.72	58.53	22 29 21.03	— 9 29 27.56	. .	. .	15.9	22.0	20.5	17.0	18.85
											15.72	21.92	20.60	17.02	18.82
43	49.81	.32	. . .	. . .	. . . .	. .	22 48 10.81								
44	49.81	.33													
45	49.92	.42 +	.15	1 56.35	297 13 58.60	60.57	8 1 3.45	— 23 52 22.72	5.70	— 8.01		Feb.15		(M.)	**180 0**
46	49.93	.27 —	.11 —	0 37.50	328 4 40.01	. .	8 38 42.21	— 6 58 18.69	7.54	21.74	12.9	20.4	18.2	14.5	16.50
47	49.93	.20 +	.20 +	0 14.44	13 28 31.09	. .	9 22 38.04	+ 52 22 9.77	9.54	38.30	13.6	20.2	18.1	14.1	16.50
48	49.94	.23 —	.16 —	0 15.54	345 34 43.05	. .	9 37 11.44	+ 24 28 21.73	8.10	34.22	13.6	20.0	17.7	13.9	16.30
											13.5	20.3	18.2	14.2	16.55
49	49.94	.25 +	.22	0 29.72	333 48 51.35	. .	10 0 15.52	+ 12 42 30.03	7.47	35.85	13.40	20.22	18.05	14.17	16.46
50	49.95	.24 +	.18	0 19.12	342 27 46.33	. .	11 5 59.78	+ 21 21 25.01	7.51	43.02					
51	49.96	.21 —	.08 —	0 16.95	15 38 45.92	. .	11 45 47.84	— 54 32 24.60	7.32	44.48		Feb.22		(M.)	**179 59**
52	— 49.95	+ 0 0.21	— 0 0.08	+ 0 0.26	0 14 34.68	69.57	12 48 52.50	+ 39 8 13.36	+ 6.07	—42.19	61.0	61.7	60.8	62.6	61.52
											60.1	61.1	60.0	60.9	60.53
											61.5	60.1	58.8	60.0	60.10
											61.7	58.8	58.0	59.7	59.55
											61.07	60.42	59.40	60.80	60.42
												Feb.23	22h.6.	(M.)	**179 59**
											56.3	57.2	56.2	56.2	56.47
											56.2	56.8	56.2	56.2	56.35
											56.8	58.0	57.2	57.1	57.27
											56.9	58.0	57.6	57.8	57.57
											56.2	57.2	56.3	57.0	56.68
											56.2	56.1	56.0	56.2	56.13
											56.3	56.2	56.1	56.1	56.18
											56.41	57.08	56.51	56.66	56.66

No.	Object.	COR. IN R. Semi-Diam.	Observed Semi-Diam. Hor.	Vert.
		m. s.	m. s.	
2	Sun . .	. .	1 7.79	
22	Sun . .	. .	1 6.77	
30	Sun . .	. .	1 5.81	
37	Jupiter .	0 1.44		
41	Sun . .	. .	1 6.00	
43	Sun . .	. .	1 5.43	

7. Transit unsatisfactory.
14. Circle reading unsatisfactory.
18. Blurred ; observation very poor.
21, 24. Very unsteady. 24. Blurred ; wind high.
25. Interrupted during observation of transit.
36, 46. Unsteady by fits.
47. Unsteady ; observed for dec. after passing wire VII.
52. Becoming unsteady.

Feb. 22. Nadir point poor ; wind high.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	H M. s.	° ′ ″	″	″	″	″	*Revs.*	*In.*	°	°	
Mar. 1	†1	*a* Virginis	27.0	37.8	49.0	0.4	10.7	22.0	32.9	13 18 59.97	310 45 39.8	42.1	46.6	47.2	43.93	. .	30.088	35.5	30.8	M.
2	†2	Sun, 1st L. } N. L.	5.0	16.9	28.6	38.9	50.0	1.3	12.8	22 51 39.07	314 9 1.2	4.5	8.6	10.2	6.12	. .	30.194	40.5	39.1	
3		Sun, 2d L. }	17.0	27.9	39.0	49.9	1.2	12.8	23.8	22 53 50.23										
	†4	Venus, 1st & S L.	48.5	0.4	11.2	21.9	33.5	44.6	55.8	0 2 22.27	319 59 57.2	61.4	63.4	64.8	61.70	. .	30.168	41.3	38.8	
4	†5	*ε* Hydræ	59.5	10.0	21.3	32.8	43.6	55.0	5.5	8 39 32.53	328 5 14.4	17.3	15.7	17.2	16.15	. .	30.072	42.0	36.0	
6		*ϑ* Ursæ Majoris	35.1	52.5	11.1	28.2	46.1	4.5	21.9	9 23 28.49	13 28 11.2	10.0	6.6	11.2	9.75	. .	30.072	41.5	35.1	
7		*ε* Leonis	25.7	38.6	49.8	1.5	13.8	25.6	38.5	9 38 1.93	345 34 55.0	58.2	56.2	55.3	56.17	. .	30.080	41.2	34.8	
8		*a* Leonis, (Mic.)	32.3	44.0	..	5.6	16.4	28.5	39.7	10 1 7.75	333 48 5.2	7.0	5.3	6.0	5.88	42.410	30.080	41.0	34.6	
9		Gr. 3820, S.P. (Mic. 2)	38.5	53.0	7.5	22.0	38.0	49.0	6.3	10 25 22.04	56 1 30.3	21.1	25.3	25.4	25.51*d*	36.398	30.068	40.5	35.5	
	10	*a* Cygni	16.4	32.6	48.2	3.0	18.4	34.0	49.8	20 37 3.20	5 50 20.4	21.7	16.8	19.8	19.67	. .	30.292	38.0	38.3	
5	†11	Sun, 1st L. } N. L.	17.0	28.1	39.2	50.6	1.1	11.8	23.7	23 2 50.21	315 18 0.5	2.5	3.5	3.8	2.57	. .	30.306	42.0	42.3	
	†12	Sun, 2d L. }	27.5	38.9	50.0	1.0	12.0	22.2	34.0	23 5 0.80										
	13	Mercury, 1st & S. L.	15.0	26.2	39.6	48.8	59.9	11.2	21.3	23 57 48.86	321 1 51.6	54.5	53.2	52.0	52.82	. .	30.304	43.0	43.7	
	14		41.0								49 34 83.8	75.2	76.2	80.1	78.83	. .	30.310	44.5	44.5	
	15			47.0							73.8	66.2	68.0	69.2	69.30	. .				
	16				41.0						65.8	63.7	61.0	62.2	63.17	. .	30.310	44.8	44.2	
	17	Polaris				41.5				1 4 40.33	64.2	55.4	58.1	60.0	59.43	. .				
	18						37.0				65.6	56.5	60.9	62.1	61.27	. .	30.314	45.0	44.5	
	19							38.5			71.0	62.5	65.2	67.8	66.62	. .				
	20								36.0		83.8	74.9	76.5	80.5	78.93	. .	30.318	45.0	45.0	
	21	*β* Tauri	51.6	5.0	17.1	29.5	41.4	54.0	6.9	5 17 29.36	349 34 45.5	44.5	43.4	45.6	44.75	. .	30.356	44.5	41.5	
	22	*δ* Orionis	30.0	41.5	52.6	3.2	13.9	24.8	35.6	5 25 3.09	320 41 51.0	52.0	53.2	55.5	52.92	. .	30.356	44.2	40.5	
	23	*a* Orionis	12.0	23.2	..	45.9	..	8.0	18.5	5 47 45.52	328 29 8.5	10.3	7.8	9.8	9.10	. .	30.304	44.0	39.6	
	24	Gr. 4101, S. P. (Mic. 6)	39.0	35.0	34.0	29.0	29.0	24.0	24.0	11 28 30.57	54 19 34.1	25.6	27.8	30.2	29.42	45.242	30.420	37.9	30.8	
	25	Gr. 1850, (Mic. 6)	8.0	7.0	1.0	55.0	51.0	48.0	43.0	11 57 56.14	47 13 34.2	26.8	29.6	31.7	30.54*d*	45.453	30.424	37.2	29.8	
	26	Gr. 1871, (Mic. 1)	46.5	41.5	29.0	22.5	14.0	6.0	57.0	12 13 22.36	48 38 65.4	54.2	58.0	61.3	59.72	46.548				
	27										52 34 52.8	42.8	49.2	48.5	48.32	. .	30.416	35.2	29.2	
	28							49.0				64.2	54.8	60.0	58.2	59.30	. .				
	†29						53.0					35 12.5	4.5	8.2	6.3	7.87	. .				
	30	Polaris, S. P.				45.5				13 8 16.75		13.0	3.9	8.2	6.8	7.98	. .	30.416	35.2	29.3
	31				48.0							11.2	0.5	4.8	5.8	5.57	. .			
6	32			39.0								34 60.3	53.4	58.5	58.5	57.65	. .			
	33		46.0									48.7	45.8	51.0	51.0	49.12	. .	30.416	34.5	29.2
	34	Sun, 1st L. } N. L.	0.0	11.1	21.8	33.0	43.8	55.7	6.2	23 6 33.09	315 41 17.2	19.4	18.8	18.0	18.35	. .	30.480	44.5	45.8	
†35		Sun 2d L. }	9.8	20.8	32.0	43.6	54.8	6.0	16.2	23 8 43.31										
†36		Mercury, 1st & S. L.	..	23.2	34.0	45.0	56.0	7.0	..	0 3 45.02	321 54 20.2	19.8	18.6	20.2	19.70	. .	30.042	45.1	47.2	
	37	Venus, 1st & S. L.	53.0	4.0	15.0	26.0	36.8	48.2	59.0	0 20 26.00	322 4 27.5	28.3	26.5	28.2	27.61*d*	. .	30.438	45.6	47.9	
	38		40.0								49 35 32.6	21.6	22.2	27.4	25.95	. .	30.430	46.2	48.0	
	39			45.0								19.6	10.2	10.0	16.4	14.05	. .			
	40				40.0							13.8	3.0	3.5	8.8	7.27	. .			
	41	Polaris				39.0				1 4 38.34		13.2	1.9	3.5	8.0	6.65	. .	30.422	46.5	48.2
	42						35.0					12.8	3.5	5.9	9.2	7.85	. .			
	43							35.0				18.8	9.2	10.5	15.0	13.37	. .			
	44								34.0			29.3	19.8	20.7	25.7	23.88	. .	30.420	47.1	48.5
	45	*a* Tauri	26.0	37.5	49.0	0.3	12.0	23.8	35.0	4 28 0.52	337 18 25.6	28.2	26.0	27.5	26.82	. .	30.370	47.0	46.1	
	46	Weisse V, 449	54.5	5.8	17.0	28.2	39.8	50.8	2.0	5 19 28.30	307 51 11.8	12.5	11.2	14.0	12.37	. .	30.378	46.5	43.1	
	47	Leporis, 1901	44.4	56.0	7.1	18.7	29.8	41.0	52.0	5 50 18.43										
8	†48	*a* Aurigæ	29.0	45.0	0.5	16.0	31.8	48.0	3.2	5 6 16.22	6 56 27.1	21.2	20.8	24.2	23.32	. .	30.128	57.0	55.8	
	49	*δ* Orionis	30.4	41.5	52.3	3.4	14.4	24.9	36.1	5 25 3.27	320 41 51.3	48.7	51.4	53.8	51.30	. .	30.130	56.8	54.1	
†50		*a* Orionis	11.8	23.5	34.6	45.6	56.6	8.0	19.0	5 47 45.60	328 29 10.2	10.5	6.8	9.0	9.12	. .	30.130	56.2	52.0	
†51		*δ* Geminorum	..	..	..	52.0	3.7	15.0	..	7 13 3.57	343 21 61.2	59.2	61.3	61.2	60.72	. .	30.148	54.0	50.1	
†52		a^2 Geminorum	..	..	..	..	..	..	..	.. .. ..	353 19 26.0	26.8	21.8	24.8	24.86*d*	. .	30.160	53.5	59.8	

DATE.	CLOCK +*m*.	Hourly Rate.	VALUE OF *n*.	VALUE OF *c*.	Error of Runs.	Mic. coin. At	
	h	s.	s.	s.	″	*h*.	*revs*.
Mar. 2,		*f* . .	*g* .013	−0.212	+0.294	−0.28	
4,	9	50.68	.008			.36	10 40.226
5,	5	50.77	.004			.26	11 40.169
6,	4	51.04	.003			.62	
8,	7	50.90	.002			−0.20	9 40.153

1 rev. = 34″.406.

29. Recorded 3*s*.0.
36. Recorded 4*m*.

Assumed Latitude 38° 53′ 39″.25 North.

No. for ref.	COR IN R. Clock.	COR IN R. Inst.	COR. IN DEC. Inst.	COR. IN DEC. Object.	Corrected Reading.	Zenith Point. 359° 59′	OBSERVED R. A.	OBSERVED DEC.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 DEC.	NADIR POINT. A.	B	C.	D.	Mean.
	s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					° ′
1	— 49.95	+ 0 0.34	+ 0 0.12	— 1 10.46	310 44 33.58	60.57	13 18 10.36	— 10 21 47.74	+ 7.41	+48.32		Feb. 24, 22h.7		(M.)	179 59
2	50.10	.33	— .02	17 4.51	313 52 1.61	60.10	22 51 54.88	— 7 14 19.26			57″4	58″0	57″5	59″2	58″03
3											57.3	58.3	58.4	59.2	58.30
4	50.11	.30	.00	0 41.67	319 59 50.03	. .	0 1 32.81	— 1 7 0.82			57.4	58.9	58.8	59.4	58.63
5	50.67	.27	— .09	— 37.42	328 4 38.64	59.66	8 38 42.13	+ 6 58 18.25	7.56	—21.66	57.6	59.5	59.2	59.6	58.97
6	50.68	.29	+ .13	+ 14.43	13 28 24.31	. .	9 22 38.01	+ 52 22 3.92	9.58	38.93	57.8	58.9	58.5	59.7	58.73
7	50.68	+ .23	— .13	— 15.50	345 34 40.54	. .	9 37 11.48	+ 24 23 20.15	8.11	34.45					
8	50.68	— 1.62	+ 1 15.14	— 29.64	333 48 51.37	. .	10 0 15.45	+ 12 42 30.98	+ 7.47	—35.87	57.50	58.72	58.48	59.42	58.53
9	50.69	— 1.02	—16 49.35	+ 1 28.15	55 46 4.31	. .	10 24 30.33	+ 85 20 16.40	— 0.34	+48.86					
10	50.74	+ 0.21	0 0.08	+ 0 6.17	5 50 25.76	. .	20 36 12.67	+ 44 44 5.37	+ 6.62	40.61					
11												Mar. 1	11h.5	(M.)	179 59
12	50.74	.32	.00	—17 1.17	315 1 1.40	. .	23 3 5.08	— 6 5 15.58							
13	50.75	.29	.03	— 0 40.70	321 1 12.10	. .	23 56 58.58	— 0 5 4.88			59.6	59.2	60.0	61.0	59.95
14			23.02	+ 1 9.84	49 36 5.65						59.0	60.9	60.2	60.9	60.20
15			10.30	1 9.86	8.86						59.6	61.5	61.7	61.5	61.08
16			2.86	1 9.87	10.18						60.1	61.1	61.5	61.1	60.95
17	50.75	3.13	0.32	1 9.86	8.97	56.22	1 3 52.71	+ 88 29 50.80	66.53	44.09	60.2	60.6	60.4	61.5	60.67
18			2.74	1 9.84	8.37						59.70	60.66	60.76	61.15	60.57
19			10.22	1 9.82	6.22										
20			22.59	+ 1 9.79	6.13										
21	50.77	+ 0.22	— 0.04	— 0 11.04	349 34 33.67	. .	5 16 38.81	+ 28 28 11.96	9.99	15.60		Mar. 2	23h.	(M.)	179 59
22	50.77	.29	.00	49.18	320 41 3.74	. .	4 24 12.61	— 0 25 17.97	8.09	24.39	60.5	61.6	62.0	62.5	61.65
23	50.77	.26	.00	— 36.85	328 28 32.25	. .	5 46 55.01	+ 7 22 10.54	8.44	16.71	60.0	60.9	60.8	61.6	60.82
24	50.79	— 1.33	+17 22.70	+ 1 26.37	54 38 18.45	60.96	11 27 38.45	+ 86 28 2.30	+ 11.54	+49.74	59.8	58.9	58.5	60.9	59.53
25	50.80	+ 1.31	+17 31.01	1 7.20	47 32 8.75	. .	11 57 6.65	+ 86 25 16.91	— 1.66	—48.34	58.6	59.3	59.8	60.2	59.47
26	50.80	+ 1.72	—16 50.34	1 9.31	48 23 18.69	. .	12 12 33.28	+ 87 16 56.85	— 9.70	—48.51	55.8	58.5	58.8	60.0	59.03
27			+ 0 22.56	1 20.49	52 36 31.37										
28			9.81	1 20.50	29.61						59.54	59.84	59.98	61.04	60.10
29			+ 2.43	1 20.49	30.79										
30	50.80	— 3 32.00	— 0.14	1 20.49	28.33	. .	13 3 53.95	+ 88 29 51.99	+ 66.72	+44.23					
31			+ 2.39	1 20.50	28.46							Mar. 4		(M.)	179 59
32			9.83	1 20.49	27.97						60.5	62.0	59.2	59.3	60.25
33			+ 21.89	+ 1 20.48	31.49						59.3	61.4	58.3	57.5	59.12
34											60.2	61.6	59.0	57.9	59.68
35	51.02	+ 0 0.32	— 0.15	—17 0.18	315 24 18.31	61.22	23 6 47.49	— 5 42 3.95			60.3	61.5	58.7	58.5	59.75
36	51.03	.27	.07	0 38.40	321 53 41.23	. .	0 2 54.45	+ 0 47 19.26			60.1	61.3	58.4	57.9	59.43
37	51.03	.29	.00	— 0 37.74	322 3 49.87	. .	0 19 35.61	+ 0 57 27.90							
38			+ 22.54	+ 1 9.63	49 36 13.04						60.08	61.56	58.72	58.22	59.64
39			— 9.84	1 9.82	14.03										
40			— 2.37	1 9.57	14.47										
41	51.03	3.13	+ 0.20	1 9.57	16.42	. .	1 3 50.44	+ 88 29 52.00	66.91	44.36		Mar. 5	11h.5	(M.)	179 59
42			— 2.25	1 9.57	15.17						57.8	59.0	53.2	54.0	56.00
43			9.61	1 9.52	13.28						57.2	58.2	53.8	54.5	55.92
44			22.05	+ 1 9.53	11.36						57.5	58.9	53.1	54.8	56.03
45	51.04	0.25	+ 0.09	— 0 24.86	337 18 2.05	. .	4 27 9.73	+ 16 11 40.08	9.34	30.66	57.8	60.2	54.0	55.2	56.80
46	51.04	.36	— .04	— 1 16.86	307 49 55.47	. .	5 18 37.62	— 13 16 26.50	7.33	29.74	57.8	59.1	53.9	54.7	56.38
47	51.04	.36	. . .	. . .	. . .	. .	5 49 27.75		7.23						
48	50.90	.20	.04	+ 0 7.04	6 56 30.32	. .	5 5 25.52	+ 45 50 9.27	11.74	11.48	57.62	59.04	53.60	54.64	56.22
49	50.90	.29	.01	— 47.47	320 41 3.82	. .	5 24 12.66	— 0 25 17.23	8.14	24.46					
50	50.90	.27	— .06	35.72	328 28 23.34	. .	5 46 54.97	+ 7 22 12.29	8 50	+16.77					
51	50.90	+ 11.61	+ .07	17.51	343 21 43.28	60.30	7 12 1.06	+ 22 15 22.23	+ 9.03	— 7.37		Mar. 5	Night	(M.)	179 59
52			0 0.00	— 0 6.86	353 19 18.00	. .		+ 52 12 56.95		—13.61	64.6	63.2	57.5	60.0	61.32
											63.8	63.3	57.4	59.6	61.03
											63.5	62.3	57.5	59.0	60.80
											63.0	63.3	56.4	59.1	60.70
											63.72	63.25	57.45	59.43	60.96
												Mar. 6		(M.)	179 59
											65.0	63.8	58.2	60.2	61.80
											65.1	64.5	59.8	60.3	62.42
											64.2	62.7	57.6	58.6	60.78
											64.0	63.0	58.0	58.8	60.95
											63.0	62.5	57.4	57.8	60.17
											64.26	63.30	58.20	59.14	61.22

No.	Object.	COR. IN R. Semi-Diam.	Observed Semi-diam. Hor.	Vert.
		m. s.	′ ″	
2	Sun . .	. .	1 5.58	
4	Venus .	+ 0 0.35	. . .	
11	Sun . .		1 5.29	
13	Mercury	+ 0 0.18	. . .	
34	Sun . .	. .	1 5 14	
36	Mercury	+ 0 0.19		
37	Venus .	+ 0 0.35		

2. Disturbed by persons entering the room.
4. Not well defined and very unsteady.
5. Sky hazy.
11, 12. Limb ragged.
48, 52. Hazy atmosphere.
50, 51, 52. Through thin clouds.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Mar. 8	†1	ι Ursæ Majoris	46.0	2.8	19.6	36.0	52.2	8.8	25.0	8 49 35.77	9 44 22.0	16.4	16.0	20.1	18.62	..	30.166	52.8	48.0	M
10	2										49 35 13.0	3.5	2.2	8.2	6.80	..	29.995	49.0	52.0	
	3					44.0						10.5	1.0	3.0	6.1	5.15	..			
	†4	Polaris					36.0			1 14 8.38		12.8	4.5	3.7	8.2	7.30	..			
	5							37.5				22.8	15.2	15.0	18.1	17.78	..			
	6								36.0			32.8	25.7	25.8	28.8	28.27	..	30.004		53.1	
	7	α Aurigæ	28.0	43.2	58.8	15.0	30.0	46.4	1.9	5 5 14.76	6 56 31.0	24.5	24.5	28.0	27.00	..	30.071	51.5	50.9	
	8	δ Orionis	29.5	39.9	51.8	1.9	12.6	23.9	35.1	5 24 2.10	320 41 55.4	56.0	55.2	56.2	55.70	..	30.090	51.2	49.8	
	†9	α Canis Minoris	36.0	46.8	58.0	8.9	20.0	30.9	42.0	7 31 8.95	326 43 32.1	36.2	32.4	34.3	33.75d	..	30.114	49.0	46.4	
13	10	Sun, 2d & N. L.	57.8	8.0	19.9	30.8	41.0	52.3	3.4	23 33 30.46	318 25 24.0	27.0	25.2	25.3	25.37d	..	29.946	47.0	30.2	
	†11	α Hydræ	24.0	35.4	46.0	58.4	9.0	..	30.6	9 19 53.90	313 7 12.5	15.9	13.0	12.7	13.09	..	30.000	41.3	30.3	
	12	ε Leonis	26.8	38.7	50.8	3.0	15.6	27.2	40.0	9 37 3.16	345 35 1.2	3.5	1.2	2.1	2.00	..	30.000	40.5	29.4	
	13	α Leonis	33.0	44.7	56.0	7.0	18.0	29.2	40.4	10 0 6.90	333 49 26.0	29.5	28.2	26.4	27.54	..	29.994	39.5	28.4	
	14	δ Leonis	15.9	28.8	40.1	51.9	3.2	15.1	27.2	11 5 51.75	342 28 10.5	15.8	11.8	11.5	12.40	..	30.004	37.0	29.0	
15	†15	15 Argus	19.5	32.0	43.8	56.0	8.1	20.0	32.2	8 0 55.95	.. .. ..	..	..	..	..	..				
	†16	ε Hydræ	1.0	12.0	23.4	34.6	45.0	56.2	6.8	8 38 34.15	.. .. ..	..	..	..	..	..				
	17	ι Ursæ Majoris	46.5	4.1	20.5	38.0	53.8	11.0	26.9	8 48 37.26	.. .. ..	..	..	..	..	..				
16	†18	α Leonis	..	45.9	57.0	8.9	19.8	30.2	42.1	10 0 13.98	.. .. ..	..	..	..	..	..				
	†19	α Ursæ Majoris	59.0	23.1	46.8	10.2	34.1	57.9	21.8	10 54 10.43	23 40 31.9	22.6	21.2	25.4	25.29d	..	30.402	37.2	22.8	
	†20	δ Hydræ et Crat.	3.8	14.8	26.1	37.2	47.9	59.4	10.9	11 11 37.16	.. .. ..	..	..	..	..	..				
	21	β Leonis	36.4	47.8	59.2	11.0	22.1	33.7	44.9	11 41 10.73	.. .. ..	..	..	..	..	..				
	22	γ Ursæ Majoris	44.8	4.0	22.0	41.8	0.0	18.8	38.2	11 45 41.37	15 38 48.5	42.2	39.5	44.6	43.70	..	30.400	33.8	22.0	
	23						51.0				52 35 20.2	10.4	9.8	15.0	13.85	..	30.420	33.8	24.6	
	24	Polaris				46.0				13 3 46.33		22.4	12.2	11.0	18.2	16.70	..			
	25				42.0							21.2	10.9	10.9	14.8	14 45	..	30.424	33.0	23.0	
	26	η Bootis	44.8	55.9	7.6	18.7	31.0	42.4	53.6	13 47 19.14	340 16 37.6	40.3	33.4	38.7	37.50d	..	30.424	32.9	23.2	
	27	α Bootis	1.8	13.0	24.8	36.3	48.1	59.9	11.0	14 8 36.42	341 5 30.4	32.9	26.0	30.8	30.02	..	30.418	32.0	23.0	
	28	ε Bootis	36.0	48.8	0.8	13.2	25.3	37.9	50.7	14 38 13.25	348 49 48.0	48.5	41.2	47.6	46.32	..	30.420	32.0	22.9	
17	29	Sun, 1st L. N. L.	27.9	38.3	50.1	0.0	11.8	22.9	34.1	23 46 0.73	320 0 4.0	7.8	8.2	3.2	5.80	..	30.495	40.0	40.0	
	30	Sun, 2d L. N. L.	37.7	48.7	59.1	10.2	21.3	32.9	44.1	23 48 10.56										
	31		44.0								49 35 26.6	17.2	12.9	22.0	19.68	..	30.452	41.5	40.7	
	32			50.0							" 18.1	8.2	3.6	14.5	11.10	..				
	33				50.0						34 66.4	56.2	54.8	63.2	60.15	..				
	34	Polaris				49.0				1 3 44.77	" 66.4	56.2	55.0	64.2	60.45	..	30.444	42.0	41.2	
	35						41.0				" 69.5	58.5	57.6	66.8	63.10	..				
	36							39.0			35 16.2	6.4	4.5	12.7	9.95	..				
	37								40.0		" 26.0	17.0	14.2	22.9	20.02	..	30.432	42.0	42.2	
18	38	β Tauri	55.6	8.9	20.8	33.2	45.8	58.0	10.9	5 16 33.32	349 34 58.5	55.0	48.7	54.8	54.25	..	30.122	45.0	48.8	
	39	ε Orionis	49.7	0.8	11.0	22.8	33.2	44.2	55.7	5 28 22.49	319 48 41.4	46.0	41.2	44.1	43.17	..	30.130	45.4	48.9	
	40	α Orionis	15.4	27.2	38.4	49.1	0.1	11.2	22.4	5 46 49.12	328 29 14.8	17.0	8.8	12.6	13.30	..	30.136	45.8	47.6	
	41	μ Geminorum	2.3	14.0	25.9	38.0	50.0	1.2	13.8	6 13 37.89	343 41 45.8	48.4	41.2	45.8	45.30	..	30.142	46.0	47.7	
20	42	α Canis Minoris	41.7	53.2	3.7	14.8	26.0	37.2	48.6	7 31 15.63	.. .. ..	..	..	..	..	..				
	43	β Geminorum	17.4	29.8	42.6	55.0	7.9	20.0	31.7	7 35 54.92	349 29 43.7	44.6	37.4	42.3	42.00	..	29.816	50.5	47.0	
	44	ε Hydræ	4.9	15.9	26.7	38.0	49.1	59.2	10.4	8 38 37.75	328 5 11.6	15.4	9.0	13.6	12.40	..	29.800	50.0	45.9	
	45	ι Ursæ Majoris	..	8.0	23.7	40.6	57.8	13.5	29.6	8 48 48.87	9 44 18.7	12.2	8.0	13.7	13.15	..	29.794	50.0	46.0	
	†46	ϑ Ursæ Majoris	41.0	59.2	16.7	34.8	52.9	11.2	29.1	9 22 34.99	13 28 17.0	12.2	5.0	13.2	11.85	..	29.778	49.5	46.0	
	47	ε Leonis	31.4	43.8	56.0	8.4	40.3	32.3	43.8	9 37 8.00	345 34 53.2	53.4	48.2	52.0	51.70	..	29.768	46.2	46.0	
	48	α Leonis	37.5	48.7	59.8	11.3	22.4	33.7	44.7	10 0 11.16	333 49 21.8	24.2	14.8	21.4	20.55	..	29.760	48.8	47.0	
22	49	α Orionis	18.0	29.0	40.0	51.0	2.0	13.0	24.0	5 46 51.00	328 29 4.9	4.6	3.4	6.5	4.85	..	29.850	48.5	53.9	M
	50	α^2 Geminorum	9.0	22.0	35.0	48.0	2.0	13.0	14.0	7 24 48.00	353 19 18.8	21.8	14.8	20.2	18.90	..	29.868	48.7	52.0	
	51	15 Argus	24.0	36.0	48.0	59.0	12.0	24.0	36.0	8 0 59.57	297 14 39.1	38.9	45.0	44.6	41.90	..	29.868	51.0	47.9	
	52	β Tauri	56.2	9.0	21.9	34.8	46.8	59.7	12.0	5 16 34.35	349 34 42.1	41.5	23.6	43.5	37.67	..	29.978	54.5	54.5	M

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.	1 rev. = 34″.406.
	h. s.	s.	s.	s.	″	h.	revs.	
Mar. 10, 6	s 10.02	g 0.020	—0.212	+0.294	—0.72			
13, 10	8.15	.020			.51			
14,					.50	15	40.142	
15, 8	7.31	.016						
16, 12	6.40	.014			.49			
17,		.016						
18, 6	5.83	.012	—0.238	—0.341	.28		40.152	
20, 9	4.37	.009			.40			
22, 8	4.02	g 0.015			—0.49			

*Lieut. Muse.

16. Wire I recorded 2s.0.
19. Wires I & II recorded 58s.0, 24s.1.
46. Transit to be diminished 1s.

March 9. Minute hand of the clock put back one minute.

ASSUMED LATITUDE 38° 53′ 39″.25 NORTH.

COR. IN Æ.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean
s.	M. s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″	Mar.	8,		(M.)	° 179
— 50.90	— 0 0.20	— 0 0.05	+ 0 10.10	9 44 28.67	60.30	8 48 45.07	+ 48 38 7.62	+ 9.92	—33.65	63″8	61″5	58″8	59″4	60″6
		2.66	1 8.07	49 36 12.21	. .					63.2	61.8	57.4	59.0	60.3
		0.15	1 8.07	13.07	. .					63.2	62.0	57.8	58.0	60.2
+ 10.12	—62 4.17	2.58	1 8.08	12.80	. .	1 3 54.33	+ 88 29 48.61	68.16	+45.48	63.1	62.0	57.1	57.8	60.0
		10.08	1 7.95	15.65	. .					63.0	61.4	57.8	58.8	60.2
		22.29	1 7.95	13.93	. .					63.26	61.74	57.62	58.60	60.3
10.04	+ 0.20	0.18	+ 0 7.10	6 56 33.97	65.02	5 5 25.00	+ 45 50 8.20	11.80	11.51					
10.03	.29	.02	— 47.83	320 41 7.85	. .	5 24 12.42	— 0 25 17.92	8.18	+24.49	Mar.	10,	14.6.	(M.)	179
9.99	.27	.00	38.65	326 42 55.10	. .	1 31 18.81	+ 5 36 29.33	7.75	— 9.79	66.5	68.9	60.9	62.0	64.5
8.36	.30	.00	16 54.04	318 8 31.57	62.91	23 32 34.46	— 2 57 52.32	. .	. .	66.2	67.8	60.4	60.5	63.7
8.16	4.02	.00	1 4.72	313 6 9.02	67.31	9 20 6.98	— 8 0 19.04	6.88	26.32	66.7	68.5	60.5	61.2	64.2
8.16	0.23	— .17	0 15.63	345 34 46.20	. .	9 37 11.55	+ 24 28 18.14	8.16	35.20	66.47	68.40	60.60	61.23	64.1
8.15	.25	.00	29.94	333 48 57.60	. .	10 0 15.30	+ 12 42 29.54	7.14	36.04					
8.13	.24	+ .20	— 19.23	342 27 52.37	. .	11 6 0.12	+ 21 21 24.91	7.46	43.82	Mar.	10,	Night.	(M.)	179
7.13	.42	. . .	. . .	. . .	. .	8 1 3.68		5.91	. .	65.0	67.2	64.3	62.1	64.6
										65.2	68.2	64.2	63.5	65.2
7.30	.27	. . .	. . .	. . .	. .	8 38 41.72		7.67	. .	65.6	68.2	64.2	63.2	65.3
7.30	+ .20	. . .	. . .	. . .	. .	8 48 44.76		10.11	. .	65.1	67.6	64.5	62.9	65.0
6.42	— 5.37	. . .	. . .	. . .	. .	10 0 15.03		7.51	. .	65.1	67.4	64.2	62.3	64.7
6.41	+ 0.23	.01	— 27.38	23 40 52.68	69.19	10 54 17.07	+ 62 34 22.74	8.46	49.02	65.20	67.72	64.28	62.80	65.0
6.41	.36	. . .	. . .	. . .	. .	11 11 43.93		6.60	. .					
6.40	.25	. . .	. . .	. . .	. .	11 41 17.38		7.04	. .	Mar.	13,	23h.7.	(M.)	179
										63.8	69.5	61.7	59.3	63.5
6.40	+ .21	0.00	+ 17.53	15 39 1.23	. .	11 45 47.98	+ 54 32 31.29	7.16	—48.02	61.6	68.1	61.0	58.2	62.2
		2.43	1 21.57	52 36 37.85	. .					63.2	68.2	61.8	59.1	63.0
6.38	— 3.57	0.00	1 21.53	38.13	. .	13 3 49.14	+ 88 29 51.86	70.64	+47.40	62.7	67.8	61.2	59.2	62.7
		2.50	+ 1 21.30	38.25	. .					62.5	68.4	61.4	59.4	62.9
6.38	+ 0.24	+ 0.02	— 22.41	340 16 15.11	. .	13 47 25.76	+ 19 9 45.17	6.67	—41.57	62.76	68.40	61.42	59.04	62.9
6.37	.24	— .08	21.41	341 5 8.53	. .	14 8 43.03	+ 19 58 38.59	6.39	43.71					
6.36	.22	— .20	12.35	348 49 33.77	. .	14 38 19.83	+ 27 43 3.83	6.21	—33.25	Mar.	13,	Night.	(M.)	179
6.23	.30	+ .01	—16 50.20	319 43 15.61	64.73	23 47 12.17	— 1 23 9.87			67.2	69.5	65.2	65.0	66.7
										68.2	69.5	65.6	65.3	67.0
		— 22.91	+ 1 10.72	49 36 7.49	. .					68.8	70.7	65.8	67.2	68.1
		10.22	1 10.71	11.59	. .					68.07	69.80	65.53	65.83	67.3
		2.75	1 10.61	8.01	. .									
										Mar.	14,	Night.	(M.)	179
6.21	+ 3.12	0.30	1 10.61	10.76	. .	1 3 54.10	+ 88 29 44.05	70.80	+47.56	68.0	69.2	66.2	67.2	67.6
		2.77	1 10.62	10.95	. .					66.2	69.0	66.0	64.2	66.3
		10.23	1 10.45	10.17	. .					68.0	70.7	67.0	65.0	67.6
		22.73	+ 1 10.46	7.75	. .					67.4	69.4	66.2	64.2	66.8
5.84	— 0.52	— 0.17	— 0 10.79	349 34 43.29	. .	5 16 38.64	+ 28 28 17.81	10.26	15.84	67.40	69.57	66.35	65.15	67.1
5.83	.33	+ .12	49.54	319 47 53.76	. .	5 28 27.99	— 1 18 28.28	8.24	23.96					
5.83	.38	— .12	36.07	328 28 37.11	. .	5 46 54.57	+ 7 22 11.63	8.68	16.84	Mar.	16,	Night.	(M.)	179
5.83	.47	.04	— 17.22	343 41 28.04	. .	6 13 43.25	+ 22 35 2.56	9.58	+ 4.95	72.6	72.7	62.6	68.2	69.0
4.38	.32	. . .	. . .	. . .	. .	7 31 19.09		7.91	. .	73.2	72.1	63.2	67.8	69.0
										73.8	74.5	64.2	68.8	70.3
4.38	.52	.04	— 10.80	349 29 31.16	54.98	7 35 58.78	+ 28 23 15.43	9.35	—15.37	73.0	72.4	62.4	67.4	68.8
4.37	.37	.11	36.33	328 4 35.96	. .	8 38 41.75	+ 6 58 20.23	7.74	21.55	72.4	72.1	62.2	67.8	68.6
4.37	9.09	— .10	+ 10.01	9 44 23.06	. .	8 48 44.15	+ 48 38 7.33	10.20	35.63	73.00	72.76	62.92	68.00	69.1
4.37	0.88	+ .16	+ 13.97	13 28 25.66	. .	9 22 38.48	+ 52 22 9.93	9.78	42.12					
4.36	.48	— .15	— 14.99	345 34 36.56	. .	9 37 11.88	+ 24 28 20.83	8.22	35.82	Mar.	17,	Noon.	(M.)	179
4.36	.41	+ .18	28.58	333 48 52.15	. .	10 0 15.11	+ 12 42 36.42	7.53	—36.26	67.9	68.8	58.2	64.2	64.7
										68.2	69.2	58.2	64.1	64.9
4.05	.38	— .15	35.28	328 28 29.42	60.62	5 46 54.67	+ 7 22 8.05	8.75	+16.86	67.8	68.5	58.0	63.8	64.5
4.02	.57	+ .21	6.77	353 19 12.34	. .	7 24 51.45	+ 32 12 50.97	9.87	—14.46	67.8	69.1	58.7	64.2	64.9
										67.1	68.1	58.6	63.9	64.4
4.02	.27	— .22	1 52.57	297 13 49.11	60.62	8 1 3.32	— 23 52 32.26	6.04	+ 5.47					
+ 4.53	— 0 0.52	0 0.00	— 0 10.61	349 34 27.06	55.47	5 16 38.36	+ 28 28 10.84	+ 10.38	+16.02	67.76	68.74	58.34	64.04	64.7
										Mar.	20,	2h.	(M.)	179
										58.8	59.2	49.7	53.8	55.3
										58.1	59.0	48.4	53.7	54.8
										58.4	59.3	49.2	54.2	55.2
										58.6	59.2	49.0	53.9	55.1
										58.3	59.1	48.8	53.8	55.0
										58.44	59.16	49.02	53.88	55.1
										Mar.	20,	Night.	(M.)	179
										58.4	59.2	50.0	53.2	55.2
										58.2	58.7	50.0	53.3	55.0
										58.8	58.2	49.8	53.1	54.9
										58.1	57.9	49.7	52.8	54.6
										58.5	57.5	48.8	52.7	54.3
										58.40	58.30	49.66	53.02	54.8

Object.	COR. IN Æ.	Observed Semi-diam.	
	Semi-Diam.	Hor.	Vert.
	M. s.	M. s.	
Sun . .	— 1 4.66		
Sun .	. . .	1 4.91	

1, 9. Through clouds.
4. Unsteady. Division under mic. C very indistinct.
11, 16. 18, 19, 20. Unsteady. 11. Blurred.
15. Blurred and very diffuse.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	THER'S Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Mar.24	1	Leporis (1901)	48.5	0.0	11.8	22.9	33.9	..	..	5 49 11.42	. . .	. .	. .	. .	. .	. .	. .	. .	. .	M.
	2	μ Geminorum	3.8	16.0	27.2	39.5	51.0	3.2	14.9	6 13 39.37	343 41 38.2	40.4	21.4	40.0	37.33	. .	29.988	54.5	52.0	
28	3	α Cygni	25.9	40.8	56.8	12.2	28.0	43.3	58.7	20 56 12.24	5 50 19.3	20.8	4.2	20.3	16.15	. .	29.788	46.8	45.6	
29	4	ε Hydræ	7.6	18.8	29.4	40.8	52.0	3.2	14.9	8 38 40.89	328 5 8.2	16.4	0.0	9.3	8.47	. .	29.630	58.2	58.0	
	†5	ι Ursæ Majoris	54.0	10.2	26.4	44.0	0.8	16.8	33.7	8 48 43.70	9 44 21.2	20.4	5.5	19.0	16.52	. .	29.630	58.2	59.2	
	6	α Hydræ	31.4	43.0	53.6	5.8	16.2	27.0	38.0	9 20 5.00	313 5 18.2	26.4	10.2	20.4	18.80	. .	29.646	58.8	58.0	
	7	ε Leonis	34.0	46.2	58.8	10.7	22.8	35.1	47.0	9 37 10.66	345 34 50.8	56.5	40.0	51.6	49.72	. .	29.650	58.5	58.8	
	8	α Leonis	40.9	51.6	2.8	13.8	25.8	37.0	47.8	10 0 14.24	333 49 16.2	23 3	5.4	16.8	15.42	. .	29.656	58.8	57.5	
	9	α Ursæ Majoris	6.4	29.5	53.0	17.0	40.0	4.5	28.4	10 51 16.97	23 40 19.3	19.0	2.7	15.5	14.12	. .	29.674	58.8	56.8	
	10	δ Leonis	23.8	35.9	47.9	59.8	12.4	22.8	35.0	11 5 59.52	342 27 60.6	68.0	51.2	62.4	60.55	. .	29.678	58.8	58.0	
	†11	β Leonis	41.8	54.0	5.2	16.0	27.9	39.0	50.1	11 41 16.29	336 30 61 9	69.0	51.0	60.0	60.47	. .	29.690	58.9	57.5	
	12	γ Ursæ Majoris	51.2	9.9	29.2	48.1	6.7	25.3	45.0	11 45 47.91	15 38 36.9	35.2	21.8	34.5	32.10	. .	29.700	59.0	58.0	
	13	Polaris, S. P.							35.0		52 34 52.1	52.2	43.2	57.1	51.15	. .	29.708	58.2	58.0	
	†14							36.0			" 67.8	64.2	53.4	61.8	61.80	. .				
	15						33.0			12 53 3.00	35 15.1	13.3	3.2	9.8	10.32	. .				
	16					28.0					" 19.4	17.2	6.8	14.5	14.48	. .	29.716	58.0	51.3	
31	17	Moon, 2d L.	33.7	44.5	56.4	7.8	18.2	29.8	41.3	12 54 7.39	. . .	.	.	.	.	.	30.208	37.2	31.0	
Apr. 1	18	Sun, 1st L.	8.2	19.0	30.4	41.1	52.0	3.4	14.4	0 40 41.21	. . .	.	.	.	.	.	30.296	43.2	45.0	
	19	Sun, 2d L.	17.8	28.9	39.8	51.0	1.5	12.7	24.2	0 42 50.84	. . .	.	.	.	.	.				
2	20	δ Leonis (Mic.)	25.7	38.0	49.6	2.0	13.5	26.0	37.6	11 6 1.78	342 28 10.1	19.7	1.2	12.5	70.87	39.584	29.864	51.5	46.6	
	†21	δ Hydræ et Crateris	11.4	23.5	34.6	46.0	57.0	8.2	19.7	11 11 45.78	307 10 9.4	14.0	0.0	10.0	8.35	. .	29.864	51.5	46.6	
	22	β Leonis (Mic.)	44.8	57.0	7.9	19.8	30.9	42.0	53.9	11 41 19.47	336 31 57.2	61.5	46.1	54.2	54.75	40.189	29.864	50.5	45.2	
	†23	γ Ursæ Majoris (Mic.)	53.5	12.2	33.0	49.8	9.0	28.0	47.0	11 45 50.36	15 38 25.8	25.0	9.7	22.2	20.68	40.189	29.864	50.5	45.5	
	24	Polaris, S. P.							43.0		52 34 60.8	55.8	47.2	56.1	54.97	. .	29.870	48.5	44.0	
	25							42.0			68.4	64.6	55.2	63.2	62.85	. .				
	26						40.0				76.8	72.9	63.5	71.4	71.15	. .				
	27					35.0				13 3 35.64	76.8	74.0	62.8	70.2	70.95	. .	29.874	49.0	44.0	
	28				32.5						80.0	77.5	63.7	75.0	74.05	. .				
	29			29.0							72.5	68.0	54.2	65.3	65.00	. .				
	30		29.0								61.2	56.2	43.7	55.0	54.02	. .	29.872	49.4	44.4	
	‡31	η Ursæ Majoris	43.5	1.0	17.8	35.4	51.3	9.0	26.0	13 41 34.86	11 10 59.2	56.5	44.0	55.0	53.67	. .				
	32	η Bootis	53.6	5.2	16.8	28.7	39.6	50.0	2.9	13 47 28.11	340 16 24.5	30.9	13.2	23.8	23.10	. .	29.882	48.2	43.8	
	33	α Bootis	10.0	21.9	32.8	44.8	56.7	8.6	19.8	14 8 44.94	341 5 17.8	23.8	7.2	17.7	16.62	. .	29.874	48.0	43.6	
	‡34	ε Bootis	45.6	58.2	10.9	23.0	35.2	47.1	59.9	14 38 22.85	348 49 33.1	41.4	22.6	34.8	32.97d	. .	29.876	47.5	43.0	
	35	Lalande, 28320	..	13.5	..	35.8	46.7	58.0	9.0	15 25 44.60	307 24 50.0	58.5	42.2	53.5	51.05	. .	29.874	47.0	40.3	
	36	Weisse XV, 789	33.2	43.7	54.6	7.0			40.0	15 40 59.70	. . .	.	.	.	.	.				
3	37	Polaris				8.0					49 34 57.2	52.5	37.2	53.2	50.02	. .	29.980	54.0	61.0	
	38						2.0			1 13 23.00	" 62.4	56.4	45.2	58.5	55.62	. .				
	39								59.0		35 22.2	16.3	4.1	18.2	15.20	. .	29.970	54.5	60.2	
	‡40	Venus, 1st & N. L.	11.2	23.3	34.7	45.9	56.7	8.5	18.0	2 27 45.47	335 46 22.4	31.4	11.8	24.2	22.45	. .	29.940	55.5	60.0	
	41	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .		"	"	"	"	39.591				
	42	μ Geminorum	..	21.7	33.9	45.8	56.8	9.0	20.4	6 13 51.27	343 41 33.5	42.2	24.0	37.0	34.18	. .	29.894	51.0	58.8	
	43	α Canis Majoris	52.6	4.7	16.2	27.8	39.0	49.8	1.5	6 38 27.37	304 36 34.7	42.4	28.2	39.4	36.18	. .	29.892	57.0	58.8	
	†44	ε Canis Majoris	2.4	15.0	27.2	40.1	52.0	5.0	17.2	6 52 39.85	292 21 60.8	67.4	58.2	62.5	62.22	. .	29.890	57.0	58.2	
	45	δ Geminorum	26.2	38.8	50.5	2.4	13.9	26.2	57.9	7 11 2.27	343 21 54.2	61.5	44.4	55.7	53.95	. .	29.890	57.0	57.5	
4	†46	α Hydræ	35.0	46.0	57.2	8.0	19.2	30.5	41.0	9 20 8.13	313 6 58.0	63.8	50.7	60.0	55.62	. .	29.780	58.0	57.9	
	47	α Ursæ Majoris	..	32.0	56.2	19.4	43.5	7.4	30.9	10 54 31.57	23 40 21.2	21.0	4.0	19.5	16.42	. .	29.780	58.0	57.9	
	48	δ Leonis	26.8	39.0	50.5	2.3	13.5	26.0	37.8	11 6 2.27	342 27 61.9	70.0	48.0	64.2	61.02	. .	29.776	58.0	59.5	
	49	β Leonis	45.9	56.9	8.4	19.8	31.0	42.7	54.0	11 41 19.82	336 31 66.4	71.5	56.4	66.0	65.07	. .	29.800	58.5	63.5	
	50	Polaris, S. P.						37.5			52 35 16.6	12.3	0.0	13.2	10.52	. .	29.824	59.5	59.5	
	51						39.0				23.6	20.4	7.0	21.2	18.05	. .				
	52					32.0				13 7 1.08	23.0	18.9	7.4	20.9	17.46	. .				

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.
	h. s.	s.	s.	s.	″	h.	revs.
Mar. 24, 6	s 4.51	g .018	—0.238	—0.341	—0.26	5	40.110
28, 21	1.60	.022			.32		
29, 10	1.19	.024			.69	9	39.917
31		.029			.60	13	.913
April 1		.020					
2, 13	f 1.68	.015			.53	11	.911
3, 7	1.77	.010			.94	3	.912
4, 12	2.08	.018			—0.05	16	.901

1 rev. = 34″.406.

11. Wires VI, VII recorded 40s.0, 51s.1.
21. Wire VII recorded 19s.7.
31. Wire VI recorded 8s.0.
34. Wire II recorded 57s.2.
44. Wire I recorded 1s.4.
46. Wires I, II, IV recorded 36s.0, 47s.0, 18s.2.

March 29, 2h. Mic. screw taken out, cleaned and replaced.
Mic. wire 6 broken, and a new one inserted instead.
Mic. head taken off and another put in its place.

ASSUMED LATITUDE 38° 53′ 39″.25 NORTH.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean
s.	M. s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″					°
- 4.52	+ 0 11.01	. . .	. . .	. . .	. .	5 49 26.95	. . .	+ 8.34		Mar. 22,		Night.	(Mu.)	179 5
4.51	— 0.47	0 0.00	— 0 16.97	343 41 20.36	. .	6 13 43.41	+ 22 35 4.14	9.70	+ 4.92	65″9	65″9	56″0	66″9	63″67
1.59	.72	— .17	+ 0 5.97	5 50 21.95	55.14	20 36 13.11	+ 44 44 6.06	5.96	+44.25	63.0	63.8	51.9	61.5	60.05
										65.1	60.0	52.5	62.6	61.05
1.23	.37	.20	— 0 35.26	328 4 33.01	54.91	8 38 41.75	+ 6 58 17.35	7.86	—21.65	64.9	64.5	52.7	61.2	60.83
1.22	.79	— .17	+ 0 9.70	9 44 26.05	. .	8 48 44.13	+ 48 38 10.39	10.39	36.92	65.8	65.1	54.2	62.6	61.92
1.21	.31	+ 1 40.24	— 1 0.44	313 6 33.06	. .	9 20 5.90	— 8 0 17.02	6.94	25.34	61.9	62.7	51.6	60.5	59.18
1.20	.49	— 0 0.25	0 14.55	345 34 34.92	. .	9 37 11.37	+ 24 28 19.26	8.32	36.65	63.7	63.5	51.5	61.6	60.08
1.19	.41	+ .30	— 0 27.84	333 48 47.83	. .	10 0 15.02	+ 12 42 32.17	7.61	36.66	62.9	62.3	50.3	61.9	59.35
1.17	1.20	.28	+ 0 24.92	23 40 39.32	. .	10 54 16.94	+ 62 34 23.66	8.60	52.49	62.1	62.8	50.0	61.0	58.97
										64.9	64.1	52.0	63.5	61.13
1.17	0.46	.23	— 0 17.92	342 27 42.86	. .	11 6 0.23	+ 21 21 27.20	7.48	45.32					
1.15	.42	+ 1 2.61	— 0 24.65	336 31 38.43	. .	11 41 17.02	+ 15 25 22.77	7.02	46.01	64.02	63.87	52.37	62.33	60.62
1.15	— .94	— 0 0.11	+ 0 15.90	15 38 47.89	. .	11 45 48.12	+ 54 32 32.23	7.15	—51.35					
		+ 23.43	1 14.10	52 36 28.68	. .									
		10.45	1 14.10	26.35	. .					Mar. 24			(M.)	179 5
- 1.12	+10 48.34	2.91	1 14.09	27.32	. .	13 3 52.46	+ 88 29 47.88	72.79	+51.46	58.3	62.0	42.5	58.9	55.43
										58.5	62.6	42.5	58.2	55.45
		+ 0.19	+ 1 14.09	28.76	. .					59.0	62.2	42.5	58.4	55.53
- 0.29	— 0 0.32	. . .	. . .	. . .	. .	12 53 5.37				58.7	62.3	42.6	58.5	55.52
										58.9	62.2	42.5	58.7	55.57
1.14	.36	. . .	. . .	. . .	. .	0 41 44.52								
										58.68	62.26	42.52	58.54	55.50
1.66	.46	— 0 11.04	— 0 18.45	342 27 41.36	53.61	11 5 59.66	+ 21 21 27.02	7.50	—45.73					
1.66	.29	+ 0.20	1 16.87	307 8 51.68	. .	11 11 43.83	— 13 57 22.68	6.62	39.83					
1.67	.42	9.39	— 0 25.42	336 31 38.72	. .	11 41 17.38	+ 15 25 24.36	7.02	46.34	Mar. 29.			(M.)	179 5
1.67	— .94	9.44	+ 0 16.39	15 38 46.51	. .	11 45 47.75	+ 54 32 32.15	7.17	—52.39	57.2	63.0	45.0	55.2	55.10
		22.63	1 16.55	52 36 34.15	. .					57.8	63.2	43.7	54.2	54.73
										57.7	63.6	45.2	55.8	55.57
		10.00	1 16.59	29.44	. .					57.5	63.2	44.1	55.5	55.08
		+ 2.40	1 16 62	30.17	. .					57.6	63.3	44.9	55.4	55.30
1.68	+ 22.05	— 0.23	1 16.63	27.35	. .	13 3 56.01	+ 88 29 43.34	73.00	+52.73	57.56	63.26	44.58	55.22	55.16
		+ 2.10	1 16.63	32.78	. .									
		9.35	1 16.62	30.97	. .									
		+ 21.67	1 16.61	32.30	. .									
										Mar. 29.			(M.)	179 5
1.69	— 0.81	— 19.97	+ 0 11.61	11 10 45.31	. .	13 41 32.36	+ 50 4 30.95	4.96	—43.58	57.2	63.0	42.7	55.0	54.47
1.70	.45	+ 0.24	— 21.07	340 16 2.27	. .	13 47 25.96	+ 19 9 47.91	6.44	43.10	57.8	63.8	43.0	54.8	54.86
1.70	.45	— .13	20.10	341 4 56.39	. .	14 8 42.79	+ 19 58 42.03	6.12	45.18	57.3	63.4	42.9	54.6	54.55
										57.9	63.2	42.4	54.8	54.57
1.71	.51	.00	— 11.62	348 49 21.35	. .	14 38 20.63	+ 27 43 6.99	5.88	35.30	58.4	63.5	43.8	54.4	55.03
1.72	— 9.33	.06	1 17.23	307 23 33.88	. .	15 25 33.55	— 13 42 40.48	7.68	—34.57	57.72	63.38	42.96	54.72	54.69
1.72	+ 6.48	. .	. . .	. . .	. .	15 41 4.46	. . .	7.80						
		— .01	+ 1 6.83	49 35 56.84	. .									
1.71	— 9 38.83	2.68	1 6.86	59.80	53.80	1 3 42.46	+ 88 29 44.00	72.94	+52.87					
		— 23.08	+ 4 6.92	59.04	. .									
										April 2.			(M.)	179 5
		+ 0.48	— 23.21	335 45 59.72	. .					55.8	62.2	41.7	53.0	53.17
1.73	0 0.42	— 10.55	23.33	335 45 48.57	. .	2 27 43.71	+ 14 39 39.60			56.4	63.0	42.4	53.3	53.78
										56.5	62.5	42.8	53.3	53.77
1.77	6.41	— 0.17	16.70	343 41 17.31	. .	6 13 43.09	+ 22 35 2.76	9.89	4.94	56.4	62.4	42.7	53.4	53.73
										56.7	62.7	42.5	53.1	53.75
1.77	0.29	+ .22	1 22.47	304 35 13.93	. .	6 38 25.31	— 16 31 0.62	7.08	8.88					
1.77	.26	.37	2 17.82	292 19 44.77	. .	6 52 37.82	— 28 46 29.78	6.21	+12.05	56.36	62.56	42.42	53.22	43.64
1.78	.47	+ .31	0 17.09	343 21 37.17	. .	7 11 0.02	+ 22 15 22.62	9.51	— 8.09					
2.03	.31	— .03	— 1 0.73	313 5 57.36	53.98	9 20 5.79	— 8 0 17.37	7.02	25.14					
2.06	13.11	.04	+ 0 24.96	23 40 41.34	. .	10 54 16 40	+ 62 34 27.61	8.71	54.01					
2.06	0.46	— .03	— 17.93	342 27 44.06	. .	11 5 59.75	+ 21 21 29.33	7.51	45.95	April 4.			(M.)	179 5
										56.3	62.6	43.2	54.0	54.02
2.07	.42	+ .03	— 24.46	336 31 40.64	. .	11 41 17.33	+ 15 25 25.91	7.03	—46.51	55.8	62.8	42.4	53.6	53.65
		10.42	+ 1 14.29	52 36 35.23						56.7	63.5	43.5	53.8	54.38
										56.0	62.7	42.8	53.9	53.85
		+ 2.27	1 14.30	34.62										
- 2.10	— 3 6.75	— 0 0.01	+ 1 14.17	31.62	53.98	13 3 52.23	+ 88 29 41.40	+ 72.76	+53.36	56.20	62.90	42.98	53.82	53.97

Object.	COR. IN R.	Observed Semi-diam.	
	Semi-Diam.	Hor.	Vert.
	M. s.	M. s.	′ ″
Moon .	— 1 1.41		
Sun . .	. .	1 4.81	
Venus .	+ 0 0.37	. . .	0 5.57

5. Thick mist ; star very faint but steady.
14. Exceedingly faint.
40. Unsteady ; + 0″.12 applied for defective illumination.
46. Mic. B recorded 53.8.
51. Observed for dec. at 57*m*. 10*s*.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	H. M. S.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
April 4	1	Polaris, S. P.			29.5						52 35 22.5	17.5	6.8	20.5	16.82	. .	29.830	59.8	59.5	M.
	2			24.0							34 75.5	70.6	55.9	72.4	68.60	. .				
	3		24.5								" 64.0	59.3	45.0	60.0	57.18	. .	29.850	59.8	59.0	
	4	α Bootis	10.2	22.5	34.2	45.6	57.4	8.8	21.0	14 8 45.67	341 5 18.4	25.0	8.0	17.5	17.22	. .	29.868	59.5	55.9	
	5	ε Bootis	46.0	58.4	11.0	23.0	35.2	48.0	59.7	14 38 23.05	348 49 36.2	36.0	26.0	38.2	34.10	. .	29.880	59.0	54.0	
	6	Lal. 28320	3.2	14.8	26.7	37.8	..	59.8	10.9	15 25 35.53	307 24 52.1	60.5	44.0	55.0	52.90	. .	29.896	58.0	51.9	
	7	Weisse XV, 789	32.3	..	54.9	..	..	29.0	..	15 40 58.73	307 3 24.8	31.5	27.8	23.5	26.90	. .	29.912	56.8	50.0	
	8	β^1 Scorpii	2.7	14.5	26.0	37.4	48.7	1.0	12.2	15 56 37.50	. . . .	.	.	.	.	. .				
	9	Moon, 2d L.	0.7	12.6	25.2	35.9	..	59.9	10.2	16 16 34.08	. . . .	.	.	.	.	. .				
5	10	Venus, 1st & S. L.	41.8	50.0	5.0	16.0	26.8	38.5	50.9	2 37 16.00	336 37 29.6	32.9	33.7	40.1	34.08d	. .	30.116	57.5	59.5	
	11	Venus, N.L. (Mic.)	..	..	..	..	..	..	..	.. .. ..	"	"	"	"	"	40.362				
6	†12	β Leonis	46.8	58.7	10.0	20.9	32.0	43.7	54.5	11 41 20.94	336 32 8.8	14.0	15.0	15.2	13.25	. .	29.800	59.0	45.0	
	13	Polaris, (Mic.)	15.0								49 34 50.5	39.9	54.2	52.6	49.30	39.131	30.010	53.5	65.4	
	14			23.0						0 50 19.00	"	"	"	"	"	39.908				
	15				19.0						"	"	"	"	"	38.682	30.011	58.5	66.0	
7	16	Sun, 1st & N.L. (Mic. 6)	2.0	15.1	25.2	36.4	47.5	58.2	10.3	1 2 36.37	327 56 14.8	14.2	18.2	19.2	16.60	38.682	30.012	58.8	67.0	
	17	Sun, 2d & S.L. (Mic 2.)	..	24.0	35.1	45.9	57.0	7.9	19.0	1 4 51.48	"	"	"	"	"	33.592				
	18	Venus, 1st & N. L.	15.9	27.8	38.7	50.4	1.3	13.8	25.2	2 46 50.44	337 27 25.3	25.0	28.9	31.7	27.72	. .	30.024	60.5	61.5	
	19	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	.. .. ..	"	"	"	"	"	39.789				
	20	α Tauri	39.2	50.9	2.2	13.5	24.8	36.8	47.5	4 27 13.56	337 21 7.8	9.5	11.8	14.4	10.87	. .	30.027	62.8	68.4	
	21	α Lyræ	9.4	23.5	37.3	51.3	5.6	19.5	33.3	15 31 51.40	.	.	.	.	.	. .				
	22	α Pegasi, (Mic.)	39.5	50.9	1.5	13.4	24.0	36.0	47.4	22 57 13.25	335 29 30.0	30.5	29.4	36.5	31.60	40.612	30.100	57.0	64.0	
8	23	α Tauri	39.8	51.7	3.0	13.9	25.6	37.0	48.2	4 27 14.17	337 18 21.9	23.8	25.0	26.5	24.30	. .	29.890	64.2	68.8	
	24	Polaris, (Mic.)	19.0								49 35 18.7	17.8	14.2	20.0	15.17	. .	30.034	61.4	73.5	
	25			22.0							34 68.2	54.6	62.2	68.5	63.38	. .				
	26				19.0					0 58 41.61	62.9	49.0	55.5	63.2	57.65	. .				
	†27					15.0					"	"	"	"	"	40.101	30.020	62.0	71.8	
	†28							13.0			35 14.4	1.4	10.0	14.5	10.08	. .			72.5	
9	29	Sun, 1st & N.L. (Mic. 6)	23.0	34.1	45.3	56.8	7.9	19.0	30.0	1 9 56.59	328 40 5.8	7.2	8.2	9.3	75.62	. .	29.954	62.0	62.0	
	30	Sun, 2d & S. L. (Mic. 2.)	32.2	43.0	54.0	5.9	17.1	28.0	39.2	1 12 5.63	"	"	"	"	"	35.142	29.955	62.0	61.7	
	†31	Venus, 1st & N. L.	53.4	5.2	16.8	27.9	39.2	50.8	3.2	2 56 28.07	338 15 28.8	30.6	30.9	33.7	31.00	. .	30.024	60.5	61.5	
	32	Venus, S.L. (Mic.)	..	..	..	..	..	..	..	.. .. ..	"	"	"	"	"	39.789				
	33	η Tauri, (Mic.)	53.7	6.0	18.2	30.1	41.8	..	5.8	3 38 25.93	344 44 23.8	24.8	24.2	29.1	25.47	39.835	29.958	64.0	63.8	
	†34	α Tauri	40.5	52.0	3.4	14.2	25.8	37.4	48.7	4 27 14.57	337 18 21.0	21.5	22.2	27.2	22.97	. .	29.956	64.5	63.9	
	‡35	α Canis Majoris	55.9	7.9	18.8	30.0	41.5	53.8	5.1	6 58 30.43	304 36 41.0	40.8	45.3	48.8	43.97	. .	29.978	63.8	62.3	
	36	ε Canis Majoris	5.0	17.9	30.7	43.0	54.8	7.5	20.6	6 52 42.79	292 22 8.7	7.2	12.8	13.6	10.57	. .	29.976	64.0	62.0	
	37	δ Geminorum	29.9	42.0	53.2	5.5	17.2	29.2	41.0	7 11 5.57	343 22 0.9	0.2	4.2	6.8	3.02	. .	29.982	63.4	61.8	
	38	a^2 Geminorum	17.8	31.0	43.8	56.2	9.8	22.8	35.7	7 24 56.72	353 19 26.5	25.0	23.2	29.2	25.97	. .	29.982	63.2	60.8	
	39	α Canis Minoris	..	..	12.8	23.9	34.9	46.0	56.4	7 31 34.80	"	"	"	"	"	. .				
	40	β Geminorum	26.8	28.9	51.0	3.2	16.2	28.3	41.1	7 56 3.65	249 29 49.8	48.2	50.8	54.8	50.90	. .	29.982	63.0	60.0	
	41								35.0		52 13 42.0	31.0	35.0	40.7	37.18	. .	29.988	63.0	58.2	
	42							43.0			" 62.2	49.5	57.8	57.8	56.83	. .				
	43						53.0			8 13 23.92	14 13.4	1.8	9.2	8.8	8.30	. .	29.988	63.0	57.0	
	44	λ Ursæ Minoris, S. P.				55.0					" 15.5	4.2	11.9	13.7	11.32	. .				
	45										13 70.2	58.0	66.0	68.0	65.55	. .	29.996	62.5	57.2	
	46			3.5							" 63.2	51.3	56.8	60.2	57.87	. .				
	47		14.0								" 48.0	35.8	40.8	44.8	42.35	. .	29.994	62.5	56.4	
	48	α Lyræ	..	..	38.5	52.6	6.8	21.0	34.7	18 32 6.72	.	.	.	.	.	. .				
10	49	Sun, 1st & N.L. (Mic. 7)	..	..	..	37.0	47.9	58.0	9.2	1 13 53.02	328 56 28.8	28.0	31.0	33.8	30.40	40.205	29.78	61.0	68.8	
	50	Sun, 2d & S. L. (Mic. 2)	13.2	24.0	35.9	46.8	57.9	9.0	19.9	1 15 46.67	"	"	"	"	"	45.430				
	51	α Canis Majoris	57.2	8.5	20.0	30.8	42.0	53.8	5.7	6 38 31.14	304 36 38.2	39.6	44.0	46.2	42.00	. .	29.660	67.0	69.5	
	†52	a^2 Geminorum	19.0	32.0	44.6	57.7	11.2	..	..	7 24 44.90	353 19 28.0	26.0	25.2	29.7	27.22	. .	29.684	62.0	68 0	

DATE.	CLOCK. +m.	Hourly Rate.	VALUE OF n.	c.	Error of Runs.	Mic. coin. At	
	h.	s.	s.	s.	″	h.	rev.
Apr. 5,	. .	g .022	— 0.238	— 0.341	— 0.30	9	40.060
6, 12	f 3 31	.026			.10	0	.063
7, 15	4 10	.028			.70	2	.157
8,	4 56	.022			.		.
9, 6	5 05	.024			.94	2	.150
						10	.151
10, 8	5 98	.025			— 1.62	2	.206

1 rev. = 34″.406.

34. Wires I, VI recorded 39s.5, 36s.4.
35. Wire V recorded 40s.5.

April 4, 16h. Adjusted telescope Mic. head.
5, 4h. Adjusted for collimation, making transit wire IV coincide with its image.
Adjusted head of microscope micrometers.
Moved alidade so as to bring Nadir Point near 0′.00.

ASSUMED LATITUDE 38° 53′ 39″.25 NORTH

COR. IN Æ. Clock.	COR. IN Æ. Inst.	COR. IN DEC. Inst.	COR. IN DEC. Object.	Corrected Reading.	Zenith Point. 359° 59′	OBSERVED R. A.	OBSERVED DEC.	REDUCTION TO 1850 0. R. A.	REDUCTION TO 1850 0. DEC.	NADIR POINT. A.	B.	C.	D.	Mean
s.	M. S.	′ ″	′ ″	° ′ ″	″	H. M. S.	° ′ ″	s.	″		Apr.6,	Night.	(M.)	°
		+ 0 2.26	+ 1 14.17	33.95	53.98									180 0
		9.44	14.15	32.19	. .					1″2	0″3	2″1	2″5	1″53
		21.77	+ 1 14.15	33.10	. .					0.8	0.9	2.0	2.8	1.62
2.11	— 0 0.45	+ 0.03	— 0 19.63	341 4 57.62	. .	14 8 43.11	+ 19 58 42.89	+ 6.09	—45.42	0.9	1.4	2.4	2.3	1.75
2.12	— .51	.00	0 11.37	348 49 22.73	. .	14 38 20.42	+ 27 43 8.00	5.84	35.62	1.3	0.9	2.1	2.6	1.72
2.14	+ 1.58	— .03	1 15.44	307 23 37.43	. .	15 25 34.97	— 13 42 37.30	7.64	34.48	1.3	0.9	1.8	2.7	1.68
2.14	+ 7.27	.01	1 16 75	307 2 10.14	. .	15 41 3.86	— 14 4 4.59	7.76	32.14	1.10	0.88	2.08	2.58	1.66
2.15	— 0.28	. .	. . . . .	. . . . .	. .	15 56 35.07		8.11						
2.15	+ 1.67	. .	. . . . .	. . . . .	. .	16 15 27.42								
											Apr.7,	Noon.	(M.)	180 0
2.30	— 0.42	— 0.00	0 22.53	336 37 11.55	. .	2 37 13.67	+ 15 30 . .			2.2	1.2	2.7	2.3	2.10
		+ 15.87	22.42	336 37 27.53						1.1	0.3	1.8	1.0	1.05
3.30	— .42	— 0.03	— 0 25.35	336 31 47.87	61.66	11 41 17.22	+ 15 15 25.46	7.03	—46.69	0.9	0.5	0.8	0.9	0.78
		57.17	+ 1 6.35	52 35 58.48	. .					1.9	0.9	1.9	1.8	1.62
3.33	+13 33.12	52.39	6.29	63.20	. .	1 3 48.79	+ 88 29 39.24	72.57	+53.84	1.8	0.9	1.8	1.9	1.60
		— 52.96	+ 1 6.23	62.57	. .					1.58	0.76	1.80	1.58	1.43
3.71	— 0 0.37	+13 37.28	— 0 30.52	328 9 23.36										
3.71	5.91	—18 23.76	31.17	327 37 22.08	61.43	1 3 37.07	+ 6 47 0.39							
		+ 0 0.11	21.30	337 27 6.53							Apr.8,	4h.2.	(M.)	179 5
3.76	0.42	— 12.55	21.41	337 26 53.76	. .	2 46 46.65	+ 16 20 37.96			62.8	61.0	60.3	61.5	61.40
3.80	.42	2 45.64	0 23.52	337 18 1.71	. .	4 27 9.34	16 11 39.53	9.87	31.56	62.0	60.9	60.0	61.9	61.20
4.20	.62	. .	. . . . .	. . . . .	. .	18 31 46.58		4.97		61.7	60.7	59.7	61.9	61.00
4.32	.40	+ 0 15.54	0 25.93	335 29 21.21	. .	22 57 8.83	+ 14 22 59.03	8.79	58.80	61.5	60.4	59.0	61.2	61.53
4.56	.42	+ 0.12	— 0 23.39	337 18 1.03	. .	4 27 9.19	16 11 38.85	9.88	31.58	62.1	60.8	60.0	61.6	61.13
		— 21.88	+ 1 5.34	49 35 58.63	. .					62.02	60.76	59.80	61.62	61.05
		9.43	5.34	59.33	. .									
4.93	+ 5 11.08	2.23	5.53	60.95	60.78	1 3 48.36	+ 88 29 39.55	72.42	54.79					
		1.62	5.54	61.57	. .						Apr.9,	1h.5.	(M.)	179 5
		— 10.60	+ 1 5.44	64.92	. .					61.9	60.0	61.2	62.4	61.38
4.94	— 0 0.38	+14 30.65	— 0 29.85	328 54 8.42						61.8	60.2	61.0	62.6	61.40
		—17 32.29	30.52	328 22 4.81	60.78	1 10 55.79	+ 7 31 55.08			61.5	59.8	60.4	61.3	60.75
	.43	+ 0 0.11	21.30	338 15 9.81						61.4	60.0	60.2	61.2	60.70
4.98		— 12.55	21.41	338 14 57.05	. .	2 56 23.05	+ 17 8 41.90			60.9	59.0	60.0	61.3	60.30
4.99	+ 3.51	11.02	15.45	344 43 59.00	. .	3 38 24.45	+ 23 37 37.47	10.36	40.05	61.8	60.0	60.6	61.8	61.05
5.01	— 0.42	+ 0.08	23.66	337 17 59.39	. .	4 27 9.14	+ 16 11 37.86	9.89	31.60	61.0	59.3	60.0	61.5	60.45
5.06	.29	.23	1 22.11	304 35 22.09	61.52	6 38 25.08	— 16 31 0.18	7.19	8.71	61.9	60.0	60.2	62.4	61.12
5.07	.26	.36	2 17.12	292 19 53.81	. .	6 52 37.46	— 28 46 28.46	6.34	+11.93	61.4	59.5	60.0	61.9	60.70
										60.8	58.8	58.8	61.2	59.90
5.08	.47	.32	0 16.99	343 21 46.35	. .	7 11 0.02	+ 22 15 24.08	9.62	— 8.21					
5.08	.55	+ .45	6.67	353 19 19.75	. .	7 24 51.10	+ 32 12 57.48	10.24	15.09	61.44	59.66	60.24	61.76	60.78
5.09	11.32	. . .	. . . . .	. . . . .	. .	7 31 18.39		8.26						
5.09	— 0.52	— .05	— 10.58	349 29 40.27	. .	7 35 58.04	+ 28 23 18.00	+ 9.74	—16.22		Apr.9,	Night.	(M.)	180 0
		+ 30.12	+ 1 14.04	52 15 21.34	. .					3.8	0.9	0.1	2.2	1.68
		13.49	1 14.00	24.27	. .					2.0	0.9	0.0	1.0	0.97
		+ 3.33	1 13.94	25.57	. .					3.0	2.0	1.0	2.3	2.08
5.10	+ 1 59.56	— 0.25	1 13.88	24.95	. .	8 15 18.38	+ 88 50 58.50	—140.52	+40.85	2.2	0.8	0.0	2.4	1.35
		+ 3.44	1 13.85	22.84	. .					2.5	1.0	0.4	2.3	1.55
		11.88	1 13.81	23.56	. .					2.64	1.12	0.30	2.04	1.53
		27.83	+ 1 13.77	23.95	. .									
5.35	— 0 14.63	. . .	. . . . .	. . . . .	. .	18 31 16.74		+ 4.90						
5.81	16.98	+20 18.39	— 0 28.70	329 16 15.75							Apr.10		(M.)	179 5
5.81	0.38	—11 40.90	0 29.41	328 44 20.09	60.80	1 14 35.35	+ 7 54 2.01			62.0	60.3	60.0	62.4	61.18
										61.5	60.2	59.0	61.0	60.42
5.95	— .29	+ 0 0.38	1 20.10	304 35 22.88	. .	6 38 24.94	— 16 30 59.31	7.21	+ 8.67					
5.97	+ 0 12.30	+ 0 0.79	— 0 6.51	353 19 21.50	. .	7 24 51.23	+ 32 12 59.91	+ 10.26	—15.13	61.75	60.25	59.50	61.70	60.80

Object.	COR IN Æ. Semi-Diam.	Observed Semi-Diam. Hor.	Vert.
	M. S.	M. S.	′ ″
Moon .	— 1 6.18		
Venus .	+ 0 0.39		
Sun . .	. .	1 4.78	16 0.84
Venus .	+ .39	. . .	0 6.29
Sun . .	. .	1 4.52	16 0.75
Venus .	+ .39	. . .	0 6.38
Sun . .	. .	1 5.12	15 58.64

12. Unsteady ; atmosphere moist.
27, 28. Observation of Sun between.
28, 52. Interrupted by clouds.
31. +0″.11 applied for defective illumination.
35. Observed with full aperture ; too bright to be well observed.
45. Observed for dec. at 25*m*. 10*s*.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean	Mic.	Barometer.	T
			s.	s.	s.	s.	s.	s.	s	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	
Apr. 10	1	β Geminorum	..	39.7	52.0	4.2	..	30.0	42.0	7 36 9.58	349 29 50.7	50.4	51.9	54.9	52.00	. .	29.686	6
11	2	β Ursæ Minoris	19.5	1.4	42.0	24.0	5.8	48.0	29.0	14 51 24.24	35 52 32.3	20.2	24.1	29.5	26.52d	. .	30.020	5
	3	β Libræ	23.2	34.4	44.8	54.8	6.0	..	29.5	15 8 52.12	312 18 25.2	27.2	30.9	34.8	29.52	. .	30.010	4
	4	α Serpentis	20.0	31.8	42.0	53.8	4.0	15.6	25.6	15 36 53.26	328 1 29.9	31.1	35.0	36.3	33.07	. .	30.010	4
	5	Anonymous (Mic 5).	52.8	4.2	16.0	27.0	37.5	49.5	0.4	16 9 26.77	308 3 54.0	51.9	56.4	59.0	55.32	37.820	30.004	4
	†6	Anonymous	..	..	..	..	..	..	9.5	16 10 9.5		"	"	"	"	. .		
	7	Lyræ, 6349	40.5	55.2	9.2	23.2	37.0	50.9	5.5	18 30 23.07	. . .	.	.	.	.	. .		
12	8	α Canis Majoris	58.5	10.0	21.5	33.0	44.0	55.0	7.0	6 38 32.71	304 36 43.2	44.2	45.1	50.5	45.75	. .	29.760	6
	9	α Canis Minoris	54.4	4.5	15.0	26.5	37.0	48.5	59.5	7 31 26.63	326 43 24.3	23.5	25.0	30.2	25.75	. .	29.778	7
	10	ε Leonis	43.0	55.5	7.0	19.0	31.0	43.6	55.8	9 37 19.27	345 35 61.2	59.4	62.0	65.0	61.90	. .	29.800	6
	11	δ Leonis	33.0	44.5	56.0	8.0	20.6	31.5	43.6	11 6 8.17	342 28 5.2	7.1	8.2	7.5	7.00	. .		6
	12	β Leonis	51.6	2.5	14.0	25.6	36.0	48.0	59.5	11 41 25.31	. . .	.	.	.	.	. .		
	13	β Corvi	57.0	9.0	20.6	32.2	44.3	56.0	8.0	12 26 32.44	298 34 45.4	43.1	47.6	56.4	47.12	. .	29.820	6
13	†14	α Persei	..	0.7	18.0	35.0	51.8	8.5	..	3 13 34.80	. . .	.	.	.	.	. .		
	‡15	Venus, 1st & N. L.	22.4	34.8	45.9	58.2	9.2	20.0	32.5	3 15 57.57	339 46 46.1	28.1	29.9	35.0	34.78d	. .	30.080	6
	16	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . .		"	"	"	"	39.822		
	17	α Tauri	43.5	54.9	6.0	17.7	29.0	40.3	52.3	4 27 17.67	337 18 41.2	24.8	26.0	32.0	31.00	. .	30.072	6
	18	α Canis Majoris	59.0	10.5	21.8	33.5	45.3	56.8	7.9	6 38 33.54	304 56 62.2	42.7	48.1	52.2	51.30	. .	30.080	5
	19	δ Geminorum	33.0	44.2	56.0	8.0	20.0	..	..	7 10 56.24	343 22 16.8	0.0	3.2	7.8	6.95	. .	30.090	5
	20	α² Geminorum	20.6	33.8	46.9	0.0	12.0	25.7	38.3	7 26 59.62	353 19 46.0	26.0	24.0	30.0	31.50	. .	30.094	5
	21	α Canis Minoris	54.0	5.0	16.0	27.1	38.0	49.2	59.8	7 31 27.02	. . .	.	.	.	.	. .		
	22	β Geminorum	29.2	41.6	53.2	6.0	18.7	31.3	44.0	7 36 6.29	349 29 67.4	54.4	47.8	49.0	54.65	. .	30.100	5
	†23	12 Canum Venaticorum	..	34.5	48.6	..	..	..	..	12 49 41.55	0 14 58.6	57.9	55.0	60.5	58.0	. .	30.168	5
14	24	Sun, 1st & N. L. (Mic. 6)	48.7	59.5	11.2	22.0	33.3	44.6	55.8	1 28 22.16	330 29 50.4	64.2	61.2	58.0	60.45	40.174	30.144	5
	25	Sun, 2d & S. L. (Mic. 2)	58.5	9.6	20.5	31.8	42.9	54.6	5.7	1 30 31.94		"	"	"	"	45.230		
	26	α Tauri	43.5	55.4	7.0	18.0	29.8	41.0	52.5	4 27 18.17	337 18 25.4	25.3	27.4	33.5	27.90	. .	30.078	5
	27	α Canis Minoris	54.5	6.0	17.0	27.5	39.0	49.0	1.0	7 31 27.71	326 43 27.3	31.1	32.2	37.5	32.01	. .	30.060	5
	28	α Leonis	50.8	2.0	13.4	25.0	..	..	..	10 0 7.80	345 34 59.1	56.1	57.2	63.9	59.07	. .	30.074	5
	29	δ Leonis	34.5	46.0	58.0	9.0	21.0	33.0	44.5	11 6 9.43	342 28 4.5	6.2	10.9	10.6	8.05	. .	30.068	5
	30	β Leonis	53.0	4.5	16.0	27.3	38.0	49.5	1.5	11 41 27.11	336 32 3.8	9.1	13.6	11.6	9.52	. .	30.064	5
	31	Polaris, S. P.					36.0				. . .	.	.	.	.	. .		
	32					35.0					. . .	.	.	.	.	. .		
	33				30.0					13 7 2.25	. . .	.	.	.	.	. .		
	34			28.0							. . .	.	.	.	.	. .		
	35	α Bootis	18.2	30.2	41.0	53.0	4.8	16.2	28.0	14 8 53.06	341 5 18.2	17.7	24.6	30.0	22.62	. .	30.060	5
15	†36	α Lyræ	14.5	28.9	43.0	56.5	10.8	25.0	39.0	18 31 56.82	. . .	.	.	.	.	. .		
	37	α Cygni	37.8	53.0	8.8	23.9	39.0	54.9	10.2	20 36 23.94	. . .	.	.	.	.	. .		
18	†38	β Libræ	27.0	38.9	50.0	0.8	12.0	24.0	34.0	15 9 0.82	. . .	.	.	.	.	. .		
	39	Lalande, 28320	13.0	24.0	34.7	46.0	56.0	7.2	18.0	15 25 45.56	307 26 51.4	68.4	74.2	77.5	7.88	. .		
	40	Scorpii, 5351	..	58.0	10.0	..	32.0	43.5	54.0	15 59 27.50	308 47 38.0	56.2	63.8	65.6	55.90	. .	30.472	3
	†41	α Lyræ	16.5	31.4	45.2	59.0	13.2	27.0	41.2	18 31 59.07	359 44 37.5	53.0	54.5	53.8	49.70	. .	30.480	3
	†42	β Lyræ	0.0	13.1	26.8	39.5	52.0	6.0	18.2	18 44 39.37	. . .	.	.	.	.	. .		
20	†43	Sun, 1st & N. L. (Mic. 7)	6.0	17.5	28.4	40.0	50.7	2.0	13.4	1 50 39.71	332 30 42.4	43.2	46.8	49.2	45.40	40.179	30.280	5
	44	Sun, 2d & S. L. (Mic. 3)	15.9	28.1	39.2	50.4	1.3	12.4	23.2	1 52 50.07		"	"	"	"	30.280	"	
	45	α Leonis	53.6	5.0	16.0	26.9	38.3	49.7	0.3	10 0 27.12	333 49 20.2	21.4	23.7	27.0	23.07	. .	30.186	6
	46	β Leonis	55.0	6.8	18.2	29.9	40.5	52.0	3.3	11 41 29.39	. . .	.	.	.	.	. .		
	47	γ Ursæ Majoris	..	..	..	..	19.0	38.0	57.3	11 46 38.10	15 38 44.2	36.8	42.3	47.2	47.62	. .	30.166	5
	48	η Virginis	30.9	42.0	53.4	4.5	15.3	25.9	37.3	12 11 4.19	321 13 36.4	40.1	43.7	46.0	41.55	. .	30.164	5
	49	Polaris, S. P.							32.0		52 34 71.2	58.0	67.5	70.5	66.80	. .	30.162	5
	50							28.5			35 21.2	10.0	17.5	22.2	17.72	. .		
	†51						35.0			13 3 33.08	" 28.7	17.6	22.4	30.0	24.67	. .		
	52				41.0						" 29.2	18.8	25.0	31.0	26.00	. .	30.162	5

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.
h.	s.	s.	s.	s.	″	h.	revs.
April 11, 15	f 6.40	g .025	—0.238	—0.341	—0.25	12	40.160
12, 10	7.71	.030			+0.27		
13, 6	8.17	.026			—1.36	3	.175
14, 10	9.17	.024			—0.08	2	.174
15, 20	9.45	.028			. .	18	.166
18, 17	11.40	.020			. .	10	.173
20, 14	11.86	.020			—0.47	2	.179
						14	.174

1 rev. = 34″.406.

6. Observed for dec. with fixed wire.
42. Wire I recorded 59s.0.

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″		April 11.		(M.)	° ′
— 5.97	— 0 5.52	— 0 0.07	— 0 10.32	349 29 41.61	60.80	7 35 58.09	+ 28 23 20.05	+ 9.76	—16.25					180 0
6.39	— 2.58	.00	+ 42.98	35 53 9.50	63.26	14 51 15.27	+ 74 46 45.49	— 3.76	36.44	4′2	2′4	2′8	3′2	3′15
6.40	+ 3.49	+ .04	— 1 5.45	312 17 24.11	. .	15 8 49.21	— 8 48 59.90	+ 7.23	35.66	4.0	2.2	3.0	3.4	3.15
6.41	— 0.37	.00	0 37.25	328 0 55.82	. .	15 36 46.48	+ 6 54 31.81	6.70	28.77	4.5	2.9	3.4	3.6	3.60
6.42	.29	4 26.15	1 15.85	308 7 5.62	. .	16 9 20.06	— 12 59 18.39	7.72	27.19	4.2	2.2	2.5	3.2	3.03
6.42	34.02	+ 0 0.07	1 16.06	308 2 39.33	. .	16 9 29.06	— 13 3 44.68	7.72	—27.18	4.5	2.5	2.8	3.7	3.35
6.48	0.62	. .	. . .	. . . .	. .	18 30 15.97	. . . .	4.76		4.28	3.44	2.90	3.42	3.26
7.61	.29	— .07	1 20.59	304 35 25.09	62.35	6 38 24.81	— 16 30 58.01	7.26	+ 8.60					
7.64	.37	— .13	0 36.46	326 42 49.16	. .	7 31 18.72	+ 5 36 26.06	8.31	— 9.88		April 12.		(Mu.)	180 0
7.70	.48	+ .09	14.39	345 34 47.60	. .	9 37 11.09	+ 23 28 24.50	8.51	38.76	1.6	1.5	1.0	2.9	1.75
7.74	.46	— .10	17.72	342 27 48.34	. .	11 5 59.97	+ 21 21 25.68	7.57	46.84	2.5	1.0	0.6	2.9	6.75
7.76	.42	. .	. . .	. . . .	. .	11 41 17.13	. . . .	7.06		3.1	2.0	1.0	4.6	2.68
7.78	.27	— .11	1 43.12	298 33 3.89	. .	12 26 24.39	— 22 33 19.21	6.69	—44.29	3.6	1.3	2.1	4.0	2.75
8.10	.82	. .	. . .	. . . .	. .	3 13 25.88	. . . .	12.49		3.1	1.4	2.0	4.8	2.83
		+ .02	0 19.11	339 46 15.69										
8.10	.44	— 12.12	19.21	339 46 3.45	65.70	3 15 49.43	+ 18 39 43.12			2.78	1.44	1.34	3.84	2.35
8.13	.43	+ 0.23	24.11	337 18 7.12	. .	4 27 9.11	+ 16 11 40.67	9.93	+31.67					
8.19	— .29	.38	1 23.42	304 33 28.26	. .	6 38 25.06	— 16 30 58.19	7.27	+ 8.55		April 13.		(M.)	179 5
8.20	+ 11.37	.50	0 17.26	343 21 50.19	. .	7 10 59.47	+ 22 15 23.74	9.69	— 8.28	80.7	60.2	61.2	65.0	66.78
8.21	— 0.55	+ .69	6.78	353 19 25.41	. .	7 24 50.86	+ 32 12 58.86	10.32	15.19	79.5	60.0	60.0	62.8	65.58
8.21	.37	. .	. . .	. . . .	. .	7 31 18.44	. . . .	8.33		79.5	59.2	59.4	61.5	64.90
8.21	— .52	— .04	— 10.76	349 29 43.85	. .	7 35 57.56	+ 28 23 17.40	9.82	16.33	79.2	60.2	60.8	62.4	65.65
8.35	+ 20.53	— .01	+ 0.25	0 14 58.24	60.56	12 48 53.73	+ 39 8 36.93	6.26	—50.01	79.2	60.0	60.2	62.2	65.40
		+14 28.19	— 28.04	330 44 0.60										
8.96	— 0.39	—17 34.30	28.68	330 11 57.47	. .	1 29 17.70	+ 9 21 37.72			79.62	59.92	60.32	62.78	65.66
9.03	.43	+ 0 0.13	23.92	337 18 4.11	. .	4 27 8.71	+ 16 11 42.80	9.95	+31.68					
9.11	— .37	— .00	37.74	326 42 54.27	57.43	73 1 18.23	+ 5 36 36.09	8.34	— 9.93		April 13, 84.		(M.)	179 5
9.17	+ 16.24	+ .03	28.59	333 48 50.66	. .	10 0 14.84	+ 12 42 32.48	7.79	37.56	62.7	59.6	60.0	60.8	60.75
9.19	— 0.46	+ .02	18.43	342 27 49.64	. .	11 5 59.78	+ 21 21 31.46	7.58	47.07	62.0	59.0	58.9	61.0	60.23
9.21	.42	— .01	25.38	336 31 44.13	. .	11 41 17.48	+ 15 25 25.95	7.07	47.46	62.0	59.2	59.2	61.5	60.48
										62.6	59.1	59.2	61.8	60.68
										62.6	59.0	59.3	61.8	60.68
9.24	— 3 5.26	. .	. . .	. . . .	. .	13 3 47.75	. . . .	72.29		62.38	60.82	59.32	61.38	60.56
9.27	0 0.45	— .01	20.12	341 5 2.49	. .	14 8 43.34	+ 19 58 44.31	5.99	46.72		April 14.		(Mu.)	179 5
9.41	.62	. .	. . .	. . . .	. .	18 31 46.79	. . . .	4.71		56.1	54.6	54.0	59.6	56.08
9.47	.72	. .	. . .	. . . .	. .	20 36 13.75	. . . .	5.34		56.4	56.8	56.4	60.4	57.63
11.37	.30	. .	. . .	. . . .	. .	15 8 49.15	. . . .	7.12		56.5	56.8	56.1	60.9	57.58
11.37	.29	+ .01	1 20.52	307 25 47.37	59.19	15 25 33.90	— 13 42 32.57	7.38	34.05	56.3	57.2	56.1	61.6	57.80
11.38	7.02	.00	1 16.86	308 46 39.04	. .	15 59 9.10	— 12 19 40.90	7.49	—28.77	56.4	57.8	56.9	61.2	58.08
11.43	0.62	— .04	0 0.27	359 44 49.39	. .	18 31 47.02	+ 38 38 29.45	4.61	+16.20					
11.44	.57	. .	. . .	. . . .	. .	18 44 27.36	. . . .	5.20		56.34	56.64	56.00	60.74	57.44
		+20 18.53	25.59	332 50 38.34										
11.62	.40	—11 36.62	26.20	332 18 42.62	60.57	1 51 32.87	+ 11 28 19.16				April 15.		(M.)	180 0
11.78	.41	+ 0 0.02	— 28.24	333 48 54.85	61.26	10 0 14.93	+ 12 42 32.84	7.87	—37.93	1.8	2.5	3.0	4.2	2.88
11.81	.42	. .	. . .	. . . .	. .	11 41 17.16	. . . .	7.11		1.4	2.2	2.0	3.7	2.33
11.82	38.69	— .05	+ 16.22	15 38 58.79	. .	11 45 47.59	+ 54 32 36.78	7.38	56.88	1.5	2.2	3.2	4.4	2.83
11.82	— 0.34	— .19	— 46.57	321 12 54.79	. .	12 10 52.03	+ 0 6 32.78	6.91	—45.72	1.0	2.2	2.4	4.2	2.45
										1.2	2.3	2.5	3.9	2.48
. .	. .	+ 21.51	+ 1 15.73	52 36 44.08	. .									
. .	. .	9.17	1 15.74	42.63	. .					1.38	2.28	2.62	4.08	2.59
— 11.84	+ 0 22.27	2.11	1 15.76	42.54	. .	13 3 48.51	+ 88 29 37.69	+ 71.34	+58.32					
. .	. .	+ 0 2.68	+ 1 15.78	44.46	. .						April 18.		(M.)	179 5
										47.2	63.2	63.8	66.0	60.05
										45.9	61.5	63.0	64.2	58.65
										46.8	63.2	63.1	65.7	59.70
										45.8	62.0	62.2	64.6	58.65
										45.2	62.4	62.6	65.4	58.90
										46.18	62.46	62.94	65.18	59.19
											April 20,	Noon.	(M.)	179 5
										60.7	60.0	59.9	61.4	60.50
										60.6	60.6	59.8	61.8	60.70
										60.4	60.3	59.1	61.5	60.33
										60.9	60.6	59.8	61.5	60.70
										60.5	60.6	59.7	61.7	60.63
										60.62	60.42	59.66	61.58	60.57

Object.	COR. IN R.	Observed Semi-diam.	
	Semi-Diam.	Hor.	Vert.
	m. s.	m. s.	′ ″
Venus .	+ 0 0.40	. . .	0 6.12
Sun . .	. . .	1 4.89	16 1.56
Sun . .	. . .	1 5.18	15 37.26

15. + 0″.10 applied for defective illumination.
14, 36. Unsteady.
23, 51. Interrupted by clouds.
38. Very unsteady.
41, 42. Blurred and unsteady.
43. Through haze.
51. Through cloud.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Apr. 20	1	Polaris, S. P. . . .		45.0							52 35 25.2	13.3	20.8	27.0	21.55	. .				M.
	2		47.0								34	70.2	56.0	66.2	70.5	65.73	. .	30.158	56.5	54.8	
	3	η Ursæ Majoris (Mic.)	56.0	11.4	28.0	44.9	..	..	36.4	13 41 35.34	11 9 51.8	47.8	52.2	55.0	51.70	41.715	30.156	56.2	58.4	
	4	η Bootis	3.8	15.7	27.2	38.4	50.2	1.5	13.6	13 47 38.63	340 16 30.1	31.0	33.6	38.4	33.27	. .	30.156	56.2	58.3	
	5	α Bootis	20.9	32.0	44.0	55.7	7.0	18.5	30.8	14 8 55.56	341 5 24.2	24.0	27.5	31.2	26.75	. .	30.152	56.0	52.8	
	6	ϵ Bootis (Mic.) . .	55.0	8.2	20.0	33.0	45.7	57.8	10.0	14 38 33.82	348 47 59.5	59.0	61.2	65.8	61.37	43.292	30.150	56.0	51.7	
	7	α^2 Libræ	6.0	17.2	28.0	40.5	51.6	3.4	13.8	14 42 40.07	305 43 28.0	29.4	35.8	38.3	32.87	. .	30.148	55.8	51.6	
	†8	β Libræ	28.0	39.5	50.8	1.2	12.5	23.9	35.0	15 9 1.56	312 18 22.2	24.0	29.2	31.3	26.67	. .	30.132	55.0	51.2	
	9	Lalande, 28320 . .	13.4	25.0	36.0	48.0	58.5	10.0	21.4	15 25 47.47	307 24 54.8	54.1	60.8	62.4	58.02	. .	30.126	55.0	51.0	
	10	Weisse XV, 789 . . .	42.0	54.0	..	15.9	..	39.0	50.0	15 41 16.18	307 3 30.0	33.3	38.3	41.2	35.70	. .	30.118	54.9	51.0	
	11	Scorpii, 5351 . . .	47.8	59.2	10.5	21.4	33.0	44.1	54.6	15 59 21.51	308 47 42.2	43.8	49.8	47.8	45.90	. .				
	12	Weisse XVI, 173 . .	57.5	9.6	20.0	32.0	43.4	54.5	6.2	16 9 31.86	308 8 7.0	7.2	14.2	14.5	10.72	. .	30.116	54.5	50.8	
	13	Weisse XVI, 176 (Mic.)	..	..	..	..	..	..	15.0	16 10 15.00	" " "	"	"	"	"	32.710	"	"	"	
	†14	α Ophiuchi	30.5	42.0	53.0	4.3	15.3	26.7	38.2	17 28 4.29	333 47 18.8	18.2	20.9	23.8	20.42	. .	30.124	54.0	49.7	
	15	γ Draconis	24.2	42.9	0.0	17.2	35.0	53.3	10.2	17 53 17.54	12 36 29.9	34.3	36.0	31.0	32.80	. .	30.132	54.0	48.8	
	16	μ^1 Sagittarii	..	27.8	39.0	50.9	2.7	14.2	26.2	18 4 56.80	300 2 29.3	28.9	33.7	36.5	32.10	. .	30.126	53.9	49.0	
	17	α Lyræ	16.9	31.0	45.4	59.8	13.4	28.0	42.0	18 31 59.50	359 44 55.7	53.2	56.2	57.8	55.72	. .	30.126	53.5	49.0	
	†18	β Lyræ	0.3	13.8	26.0	39.5	52.4	5.5	19.2	18 44 39.53	354 17 37.8	38.2	40.1	43.2	39.82	. .	30.130	53.5	48.5	
21	19	Sun, 1st & N. L. (Mic. 6)	49.5	1.2	12.2	23.4	34.5	45.0	56.4	1 54 23.17	332 57 4.5	3.2	9.5	9.9	6.77	40.180	30.166	66.0	76.5	
	20	Sun, 2d & S. L. (Mic. 2)	0.5	11.9	22.7	34.0	45.0	56.0	7.3	1 56 33.91	" " "	"	"	"	"	35.302	"	"	"	
22	21	Sun, 1st & N. L. (Mic. 6)	33.8	45.0	56.2	7.4	18.5	29.6	41.5	1 58 7.41	333 17 24.3	23.8	25.2	31.6	26.22	40.170	30.132	74.6	81.8	
	22	Sun, 2d & S. L. (Mic. 2)	44.5	56.0	6.9	17.8	29.1	40.5	52.4	2 0 18.17	" " "	"	"	"	"	35.250	30.132	74.8	81.8	
	23	α Tauri	48.0	59.3	10.4	21.9	33.8	44.9	..	4 27 16.38	337 18 22.0	23.4	23.0	30.2	24.65	. .	30.058	75.0	81.2	
	24	α Aurigæ	50.2	6.0	21.8	37.5	53.0	8.9	24.7	5 5 37.45	6 56 23.0	18.6	20.0	27.7	22.32	. .	30.052	77.0	81.2	
	25	ϵ Leonis	48.0	0.0	12.0	23.8	36.0	48.2	0.0	9 37 24.00	345 34 60.2	58.3	58.9	63.8	60.30	. .	30.038	73.5	73.0	
	†26	α Leonis	54.2	5.5	16.8	27.5	38.9	50.2	1.0	10 0 27.73	333 49 22.8	20.5	22.8	27.8	23.47	. .	30.038	73.2	71.9	
	27	δ Leonis	..	48.8	0.5	11.9	23.4	35.0	48.0	11 6 17.93	342 28 10.9	12.8	13.8	16.8	13.57	. .	30.028	73.5	71.5	
	†28	β Leonis	56.0	8.0	18.5	29.8	40.9	52.7	4.4	11 41 30.04	336 32 14.5	14.5	16.2	16.5	15.42	. .	30.018	72.5	70.2	
	29	β Corvi	1.0	13.8	25.3	36.8	48.7	0.5	12.5	12 26 36.94	298 34 45.6	46.1	54.3	50.3	49.07	. .	30.014	72.0	70.0	
	30								49.0							. .				
	31							45.0			52 35 27.0	15.0	18.8	26.2	21.75	. .	30.000	71.5	69.4	
	32						42.0				33.1	21.6	26.5	33.8	28.75	. .				
	33	Polaris, S. P. . .				38.0				13 3 38.59	37.8	25.2	35.2	35.8	33.50	. .				
	34				36.0						34.6	22.6	31.9	34.2	30.82	. .	29.996	72.0	69.1	
	35			30.5							26.5	15.8	24.5	26.5	23.32	. .				
	36		29.5								14.8	2.3	11.2	15.0	10.82	. .	29.992	71.2	68.8	
	37	α Bootis	21.4	33.0	44.6	56.2	8.1	19.5	31.0	14 8 56.26	341 5 25.0	24.2	27.6	30.1	26.72	. .	29.986	70.8	68.0	
	38	α Lyræ	17.5	32.3	46.9	0.7	..	29.6	42.4	18 32 56.23	359 44 58.0	54.8	58.2	60.7	57.92	. .	29.926	68.6	63.4	
	39	ζ Aquilæ	3.6	14.9	26.1	37.4	48.6	0.2	11.0	18 58 37.40	334 45 10.8	18.6	14.2	13.6	14.30	. .	29.922	68.3	61.8	
	†40	δ Aquilæ	28.4	39.6	50.4	1.6	12.0	23.3	34.5	19 18 1.40	323 55 55.2	58.9	60.9	64.2	59.80	. .	29.930	68.0	60.9	
	†41	γ Aquilæ	40.3	51.4	2.5	13.6	24.7	36.0	47.1	19 39 13.66	331 21 33.4	33.5	35.0	37.2	34.77	. .	29.930	68.5	61.8	
24	42								55.0							. .				
	43							48.0			52 35 16.8	12.9	22.4	21.5	18.40	. .	30.358	54.8	47.0	
	44						49.0				28.3	19.2	25.8	20.0	25.82	. .				
	45	Polaris, S. P. . .				39.0				13 3 38.59	29.0	18.5	28.6	30.0	26.52	. .				
	46				41.0						27.5	16.2	24.7	28.7	24.27	. .				
	47			36.0							21.3	11.4	17.5	23.0	18.30	. .	30.370	54.5	46.5	
	48		39.0								. . .	.	.	.	. .					
	†49	α Bootis	22.4	33.2	45.4	56.8	8.9	20.0	32.2	14 8 56.99	. . .	.	.	.	. .					
25	†50	Moon, 1st & N. L. (Mic. 6)	9.5	..	31.2	41.8	53.7	5.0	16.0	11 3 46.20	323 31 20.8	24.4	28.1	29.1	25.60	39.735	30.256	53.8	47.8	
	†51	β Lyræ	2.3	16.0	28.8	41.2	54.7	7.3	21.0	18 44 41.63	. . .	.	.	.	. .					
	52	ζ Aquilæ	4.9	16.4	28.0	38.9	50.0	1.8	13.0	18 58 39.00	. . .	.	.	.	. .					

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	c.	Error of Runs.	Mic. coin. At		1 rev. = 34″.406.
	h.	s.	s	s.	″	h.	revs.	
Apr. 21,	. .	. .	—0.238	—0.341		2	40.180	
22, 13	f 12.46	g .020			—0.41	2	40.170	
24, 14	13.26	.020				15	40.244	
25, 19	14.07	.020				16	40.169	
Apr. 26,	. .	g .020	— 0.048	— 0.531		2	40.181	

8. Wire I recorded 27s.0.
14. Wires V, VI recorded 14s.3, 25s.7.
24. Wire III recorded 20s.8.
28. Wire III recorded 17s.5.
40. Wires IV, VII recorded 0s.6, 33s.5.
41. Wires IV, V recorded 12s.6, 23s.7.
51. Wires VI, VII recorded 6s.3, 19s.0.

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN Æ.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		0° 0′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mea
s.	M. s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″		Apr 20	Night.	(M.)	° 179
. .	. .	+ 0 10.41	+ 1 15.74	47.69	. .									
. .	. .	23.13	1 15.68	44.54	. .									
— 11.85	+ 9.43	+ 0 53.03	+ 0 11.39	11 10 56.12	1.26	13 41 32.92	+ 50 4 34.11	+ 4.84	—48.40	61″6	59″5	59″8	62″2	60″7
										62.4	60.9	61.2	63.2	61.9
11.86	— 0.45	0.00	— 20.66	340 16 12.61	. .	13 47 26.32	+ 19 9 50.60	6.30	45.51	61.4	60.2	60.1	62.3	61.0
11.86	.45	— .08	19.94	341 5 6.70	. .	14 8 43.25	+ 19 58 44.69	5.95	47.61	61.7	60.5	60.5	63.0	61.4
11.87	.51	+ 1 45.20	11.52	348 49 35.05	. .	14 38 20.44	+ 27 43 13.04	5.64	38.50	61.5	60.1	60.0	63.1	61.1
11.87	.29	0 0.00	1 20.95	305 42 11.92	. .	14 42 27.91	— 15 24 10.09	7.20	39.33	61.72	60.24	60.32	62.76	61.2
11.88	.31	.06	1 4.05	312 17 22.68	. .	15 8 49.37	— 8 48 59.33	7.09	35.63					
11.89	.29	.20	1 16.17	307 23 42.05	. .	15 25 35.29	— 13 42 39.96	7.35	34.02		Apr 21		(M.)	179
11.89	.29	+ 2.61	1 17.06	307 2 21.25	. .	15 41 4.00	— 14 4 0.76	7.44	31.84					
11.90	.30	— 0.05	1 12.51	308 46 33.34	. .	15 59 9.31	— 12 19 48.67	7.45	28.77	60.9	60.4	60.2	61.9	60.8
11.90	.29	+ .17	1 14.25	308 6 56.64	. .	16 9 19.67	— 12 59 25.37	7.53	27.33	61.2	61.1	60.9	61.9	61.2
										60.7	60.8	60.3	61.4	60.8
11.90	34.02	— 4 16.80	1 14.43	308 2 41.22	. .	16 9 29.08	— 13 3 40.79	7.53	27.15	61.5	60.9	60.0	61.9	61.0
11.93	0.41	— 0 0.10	— 0 28.81	333 46 51.51	. .	17 27 51.95	+ 12 40 29.50	6.42	— 6.29	61.0	61.0	59.7	61.5	60.8
11.94	.85	+ .08	+ 13.12	12 36 46.00	. .	17 53 4.75	+ 51 30 23.99	2.49	+ 6.51					
11.94	6.16	.07	— 1 41.01	300 0 51.02	. .	18 4 38.70	— 21 5 30.99	8.65	— 6.80	61.06	60.84	60.22	61.72	60.9
11.95	0.62	.01	0 0.26	359 44 55.45	. .	18 31 46.93	+ 38 38 33.44	4.55	+15.91					
11.95	.57	— .05	5.86	354 17 33.91	. .	18 44 27.01	+ 33 11 11.90	5.13	17.24					
											Apr 22		(M.)	179
12.04	.40	+14 28.21	24.29	333 11 10.69	0.96	1 55 16.10	+ 11 48 50.50							
		—17 28.16	24.87	332 39 13.72						62.5	62.0	63.2	63.2	62.7
		+14 28.11	23.61	333 31 30.72	2.61	1 59 0.15	+ 12 9 8.14			62.6	61.8	62.5	63.8	62.6
12.24	— .40									62.2	61.2	62.8	64.0	62.5
		—17 29.55	24.18	332 59 32.33						62.0	61.4	62.5	63.3	62.3
12.29	+ 5.27	+ 0 0.06	— 22.97	337 18 1.62	. .	4 27 9.36	+ 16 11 38.26	10.02	31.77	62.5	62.0	63.0	63.8	62.8
12.30	— 0.74	— .09	+ 6.11	6 56 28.91	. .	5 5 24.41	+ 45 50 5.55	12.75	+15.09					
12.39	.49	— .15	— 14.33	345 34 45.82	. .	9 37 11.12	+ 24 28 22.46	8.67	—38.78	62.36	61.68	62.80	63.62	62.6
12.40	.41	+ .21	27.45	333 48 56.23	. .	10 0 14.92	+ 12 42 32.87	7.90	38.06					
12.42	6.39	.18	17.65	342 27 56.10	. .	11 5 59.12	+ 21 21 32.74	7.66	47.97					
											Apr 25		(M.)	179
12.43	0.42	+ .11	24.30	336 31 51.23	. .	11 41 17.19	+ 15 25 27.87	7.12	48.25					
12.45	— .27	— .18	1 42.39	298 33 6.50	. .	12 26 24.22	— 22 33 16.86	6.70	—43.27	60.9	60.2	59.6	62.2	60.7
. .	. .	. .	. .	. .	. .					60.9	59.0	59.0	61.5	60.1
										61.7	60.2	60.2	62.3	61.1
. .	. .	+ 0 10.47	+ 1 13 13	52 36 45.35	. .					61.6	60.2	60.3	62.4	61.1
. .	. .	+ 2.71	1 13.14	44.60	. .					60.8	59.7	59.5	62.2	60.5
12.46	+ 21.99	— 0.05	1 13.15	46.60	. .	13 3 48.12	+ 88 29 37.72	69.89	+58.92					
. .	. .	+ 2.14	1 13.16	46.12	. .					61.18	59.86	59.72	62.12	60.7
. .	. .	9.25	1 13.16	45.73	. .									
. .	. .	+ 21.42	+ 1 13.18	45.48	. .						Apr 26	24.5	(M.)	179
12.48	— 0.44	— 0 0.08	— 0 19.24	341 5 7.40	. .	14 8 43.34	+ 17 58 44.04	5.93	—47.92					
12.57	+ 1.61	.00	0.25	359 44 57.67	. .	18 31 47.27	+ 38 38 34.31	4.49	+15.58	61.2	61.0	61.0	62.8	61.5
12.58	0.41	+ .04	26.75	334 44 47.59	. .	18 58 24.41	+ 13 38 24.23	6.69	15.65	61.8	60.4	61.3	62.8	61.5
										62.2	60.5	61.5	62.4	61.6
12.59	.35	— .15	41.38	323 55 18.27	. .	19 17 48.46	+ 2 48 54.91	7.53	17.36	61.6	61.3	61.4	63.5	61.9
12.59	.39	+ .09	— 30.98	331 21 3.88	. .	19 39 0.68	+ 10 14 40.52	7.17	24.20	62.4	61.7	62.2	63.8	62.5
. .	. .	. .	. .	. .	. .									
		10.53	+ 1 17.48	52 36 46.41	. .					61.84	60.98	61.48	63.06	61.3
. .	. .	2.71	1 17.49	46.02	0.72	13 3 47.34	+ 88 29 36.39	69.46	+59.49					
13.24	+ 21.99	0.01	1 17.43	43.96							Apr 27		(M.)	179
. .	. .	2.24	1 17.38	43.89	. .									
. .	. .	9.46	1 17.38	45.14	. .					61.2	59.6	63.2	63.5	61.8
. .	. .	. .	. .	. .	. .					61.0	60.1	63.2	64.2	62.1
										60.8	59.8	62.4	63.2	61.5
13.26	— 0.45	. .	. .	. .	. .	14 8 43.28	. . . .	5.92		61.2	60.4	63.6	64.2	62.3
13.91	4.06	+14 13.26	+16 20.28	324 1 59.24	. .	11 3 29.13	+ 2 55 37.77			61.0	60.3	63.1	63.8	62.0
14.06	0.57	. . .	. . .	. . .	. .	18 44 27.00	. . . .	4.99						
— 14.07	— .41	. . .	. . .	. . .	. .	18 58 24.52	. . . .	+ 6.61		61.04	60.04	63.10	63.78	61.9

Object.	COR. IN Æ.	Observed Semi-Diam.	
	Semi-Diam.	Hor.	Vert.
	M. s.	M. s.	′ ″
Sun . .	. . . .	1 5.37	15 58.47
Sun . .	. . . .	1 5.38	15 59.19
Moon .	. . . .	1 0.90	

16. Obs'd for dec. after passing wire VII.
18, 51. Observation not good. 51. Very unsteady.
40, 49. Unsteady. 40. Obs'n of dec. not good.
45. Very unsteady.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Apr. 25	1	δ Aquilæ	30.4	40.6	52.0	3.4	14.0	25.0	35.8	19 18 3.03	. . .	.	.	.	. .	. .				M.
	†2	α Aquilæ	2.2	13.0	24.0	34.9	46.2	56.9	8.4	19 43 3..09	. . .	.	.	.	. .	. .				
	3	α Andromedæ	..	19.5	31.8	44.6	57.0	9.2	..	0 0 44.42	. . .	.	.	.	. .	. .				
	4	Polaris	36.0								49 34 72.5	57.8	66.4	73.7	67.60	. .	30.082	56.2	61.4	
	5			36.0								62.0	49.1	57.2	62.6	57.72	. .			
	6				29.0							55.5	41.8	48.2	55.2	50.17	. .			
	7					..				1 4 26.33		53.8	40.4	48.9	55.4	49.62	. .	30.062	57.0	61.8
	8						19.0					55.8	42.4	50.9	58.5	51.90	. .			
	9							20.0				63.2	49.2	56.8	65.8	58.75	. .			
	10								18.0			76.4	63.2	70.8	78.2	72.15	. .	30.054	57.5	62.9
26	11	Sun, 1st & N. L. (Mic. 6)	36.4	47.9	59.1	10.5	21.4	33.4	44.2	2 13 10.41	334 36 22.8	24.9	26.6	30.4	26.17	40.181	30.016	59.2	64.5	
	12	Sun, 2d & S. L. (Mic. 2)	47.6	59.2	10.4	21.8	33.4	44.3	55.9	2 15 21.80		"	"	"	"	"	35.436			
27	13	η Ursæ Majoris (Mic. 5)	57.0	14.6	31.5	48.5	5.4	22.9	39.2	13 41 48.44	11 7 32.3	26.2	33.6	35.8	31.96d	35.890				
	14	α Bootis	..	35.4	..	59.0	10.8	22.1	33.0	14 9 8.06	341 5 26.0	25.2	30.9	33.2	28.82	. .	29.800	67.8	63.5	
30	†15	α Coronæ Borealis	55.3	7.7	20.0	32.6	44.2	57.0	8.7	15 28 32.22	348 20 19.2	23.8	28.5	30.5	25.50	. .	29.940	65.0	49.8	
	16	α Serpentis	30.2	41.7	52.8	4.0	14.1	25.6	36.4	15 37 3.55	328 1 32.5	36.2	42.4	43.7	38.70d	. .	29.938	65.0	49.6	
	†17	δ Ophiuchi	6.2	17.9	28.0	39.0	50.0	1.4	12.0	16 6 39.22	317 49 21.9	26.4	30.3	33.0	27.87d	. .	29.946	63.5	48.0	
	18	β Draconis	23.8	..	0.0	18.1	35.7	54.0	12.0	17 27 23.93	. . .	.	.	.	. .	. .				
May 4	†19	ζ Ursæ Minoris	21.0	17.0	10.0	..	56.5	..	45.5	15 49 42.00	. . .	.	.	.	. .	. .				
	†20	δ Ophiuchi	8.2	19.3	30.2	41.2	52.6	3.0	14.0	16 6 41.22	317 49 24.3	35.2	34.9	34.2	32.15d	. .	30.236	53.0	44.2	
	21	α Scorpii	47.2	59.5	11.4	24.0	35.8	48.0	0.0	16 20 23.70	295 3 14.4	21.8	22.8	25.3	20.32	. .	30.234	52.5	44.9	
	†22	α Herculis	28.2	39.6	50.7	2.0	13.0	24.4	36.0	17 8 1.99	. . .	.	.	.	. .	. .				
5	23	Anonymous (Mic.)	22.2	36.0	50.0	3.4	..	32.4	45.9	10 22 1.65	358 52 21.4	21.9	20.1	21.5	21.24d	45.388	30.238	61.5	59.0	
	24	α Andromedæ	..	24.5	37.0	50.0	2.0	13.8	26.0	0 0 49.49	. . .	.	.	.	. .	. .				
	25	Polaris	42.0								49 35 11.2	2.9	9.2	10.3	8.40	. .	30.232	59.2	63.0	
	26			48.0							34 58.5	49.7	53.7	58.8	55.17	. .	30.232	59.5	63.5	
	27				40.0						50.6	42.2	45.7	51.2	47.42	. .				
	28					42.5				1 2 18.08	49.5	40.6	43.4	49.7	45.80	. .	30.230	60.1	64.0	
	29						31.0				53.6	45.0	49.8	54.5	50.72	. .	30.230	60.8	64.2	
	30							..			61.2	59.2	58.9	62.0	60.32	. .	30.228	61.6	64.8	
	31								25.0		35 14.8	6.5	10.9	14.5	11.67	. .	30.228	61.6	65.0	
6	†32	Sun, 1st & N. L. (Mic. 6)	47.2	59.0	10.9	22.8	33.2	45.2	56.4	2 51 22.10	337 37 52.5	58.8	56.2	60.4	56.97	40.181	30.186	62.6	68.4	
	33	Sun, 2d & S. L. (Mic. 2)	1.2	13.1	23.5	35.3	46.2	58.4	9.9	2 53 35.37		"	"	"	"	"	35.478	"	"	"
	†34	α Aurigæ	57.0	12.5	28.2	44.0	59.8	15.4	31.0	5 5 43.99	. . .	.	.	.	. .	. .				
	†35	Venus, 1st & N. L.	8.4	21.0	33.2	44.6	57.3	9.2	21.2	5 12 44.99	345 40 8.0	10.5	9.0	10.0	19.30	. .	30.128	65.0	70.8	
	36	Venus, S. L. (Mic.)	..	..	..	..	..	..	..			"	"	"	"	"	39.805	"	"	"
	†37	ι Ursæ Majoris	13.8	30.4	47.0	3.7	20.0	37.1	53.4	8 49 3.63	. . .	.	.	.	. .	. .				
	38	ε Leonis	54.4	7.0	18.6	30.7	42.7	54.8	6.5	9 37 30.67	345 33 60.7	58.6	63.0	64.9	61.80	. .	30.072	65.0	65.1	
	39	α Leonis	0.7	..	22.9	34.5	45.7	56.5	8.0	10 0 38.05	. . .	.	.	.	. .	. .				
8	40	Sun, 1st & N. L. (Mic. 6)	33.1	44.4	56.0	7.6	18.8	30.8	42.4	2 59 7.59	338 11 3.7	4.4	6.4	7.6	5.50d	40.247	29.504	67.0	77.4	
	41	Sun, 2d & S. L. (Mic. 2)	46.7	58.0	9.1	20.8	32.0	44.2	55.2	3 1 20.86		"	"	"	"	"	35.490	"	"	"
	42	α Aurigæ	..	..	..	..	0.5	16.8	32.0	5 6 16.43	. . .	.	.	.	. .	. .				
	†43	β Tauri	20.4	33.8	43.5	58.2	10.8	23.8	35.7	5 16 58.33	. . .	.	.	.	. .	. .				
	†44	Venus, 1st & N. L.	35.2	47.2	59.2	11.2	23.2	35.8	47.3	5 23 11.30	345 54 60.4	59.0	60.5	65.7	61.40	. .	29.482	67.2	79.2	
	45	Venus, S. L. (Mic.)	..	..	..	..	..	..	..			"	"	"	"	"	39.845			
10	46	α Virginis	..	9.0	20.2	31.0	42.8	54.5	5.0	13 17 37.08	. . .	.	.	.	. .	. .				
	†47	η Ursæ Majoris	2.4	19.5	37.0	54.0	10.9	27.2	44.8	13 41 53.69	. . .	.	.	.	. .	. .				
	48	η Bootis	11.9	24.0	35.2	46.8	58.0	9.9	22.0	13 47 46.83	. . .	.	.	.	. .	. .				
	49	α Bootis	29.0	40.9	52.5	4.0	15.9	27.1	39.0	14 9 4.06	. . .	.	.	.	. .	. .				
	50	ε Bootis	..	..	..	40.5	53.4	6.2	18.4	14 38 59.62	. . .	.	.	.	. .	. .				
13	†51	η Ursæ Majoris	0.0	17.1	34.0	51.0	7.8	24.9	42.8	13 41 51.09	. . .	.	.	.	. .	. .				
16	52	η Ursæ Majoris	..	..	..	..	9.0	26.5	44.0	13 42 26.50	. . .	.	.	.	. .	. .				

DATE.	Clock +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.
	h.	s.	s.	s.	″	h.	revs.
April 27,	14	f 14.91	g .020	−0.048	−0.531	−0.22	2	40.181
	30, 16	16.47	.020			+0.31		
May	4, 17	18.40	.020			+0.71	12	40.148
	5, 0	19.22	.021			−0.51	10	40.176
	6, 8	19.27	.022			−0.74	3	40.181
						. .	18	40.273
	8, 5	20.06	.016			. .	3	40.247
	10, 14	20.48	.006			−0.18		
	13		g .000			−0.18		

1 rev. = 34″.406.

2. Wire VII recorded 7s.4.
15. Wires II, III recorded 8s.7, 19s.0.
20. Wires II, VII recorded 20s.3, 15s.0.
22. Wire I recorded 27s.2.
34. Wire III recorded 27s.2.
37. Wire II recorded 31s.4.
43. Wire III recorded 46s.5.
47. Wire V recorded 9s.9.
51. Wire I recorded 59s.0.

May 10, 13h. Found the fixed horizontal wire slackened.

ASSUMED LATITUDE 38° 53′ 39″.25 NORTH.

COR. IN R. Clock.	COR. IN R. Inst.	COR. IN DEC. Inst.	COR. IN DEC. Object.	Corrected Reading.	Zenith Point. 359°59′	OBSERVED R. A.	OBSERVED DEC.	REDUCTION TO 1850.0. R. A.	REDUCTION TO 1850.0. DEC.	NADIR POINT. A.	B.	C.	D	Me
s.	M. s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″					°
— 14.07	— 0 0.35	. . .	. . .	. . . .	60.72	19 17 48.61	. . . .	+ 7.45			April 30.		(M.)	179
14.08	.38	. . .	. . .	. . . .	. .	19 43 20.63	. . . .	7.31		58″5	59″5	62″2	64″5	61″
14.17	.53	. . .	. . .	. . . .	. .	0 0 29.72	. . . .	8.86	+63.19	59.0	60.2	62.8	63.2	61.3
. .	. .	— 0 21.55	+ 1 7.00	49 35 53.05	. .					58.7	60.2	62.5	64.0	61.3
. .	. .	9.28	1 6.95	55.39	. .					59.0	60.3	62.8	63.4	61.3
. .	. .	— 2.11	1 6.90	54.96	. .					58.4	60.4	63.2	63.9	61.4
14.19	22.24	+ 0.15	1 6.86	56.63	. .	1 3 49.90	+ 88 29 33.84	69.08	+59.92	58.72	60.12	62.70	63.80	61.3
. .	. .	— 2.54	1 6.82	56.18	. .									
. .	. .	10.32	1 6.77	55.15	. .						April 30.		(M.)	179
. .	. .	— 23.06	+ 1 6.74	55.83	. .					59.5	61.0	63.0	65.0	62.1
14.21	0.56	+14 27.89	— 0 23.01	334 50 31.05	61.84	2 14 1.33	+ 13 28 12.34			58.0	60.2	62.7	63.2	61.0
		—17 23.90	— 23.46	334 18 38.81						58.1	60.6	63.4	64.4	61.6
14.91	.88	+ 3 18.96	+ 11.13	11 11 2.05	61.99	13 41 32.65	+ 50 4 39.31	4.84	—50.34	58.5	60.8	63.8	64.0	61.7
14.91	9.93	0 0.09	— 19.29	341 5 9.62	. .	14 8 43.22	+ 19 58 46.88	5.91	48.71	58.2	60.8	64.8	64.2	62.0
16.45	0.60	+ .10	11.99	348 20 13.61	61.33	15 28 15.17	+ 27 13 51.63	5.32	31.98					
16.46	.54	— 0.08	36.27	328 1 2.35	. .	15 36 46.55	+ 6 54 29.89	6.41	30.65	58.46	60.68	63.54	64.16	61.7
16.47	.53	+ .02	52.80	317 48 35.09	. .	16 6 22.22	— 3 17 46.99	6.88	26.84					
16.50	— 6.90	. . .	. . .	. . . .	. .	17 27 0.53	. . . .	+ 1.95			May 4.		(M.)	179
18.37	+ 18.77	. . .	. . .	. . . .	. .	15 49 42.40	. . . .	— 10.80		56.2	64.2	59.8	59.2	59.8
18.38	— 0.53	— .01	— 0 53.76	317 48 38.38	59.61	16 6 22.31	— 3 17 41.98	+ 6.82	27.13	55.5	63.9	58.7	58.8	59.3
18.38	.57	— .08	+ 2 6.21	295 1 14.03	. .	16 20 4.75	— 26 5 6.33	7.96	27.33	55.7	63.8	58.6	58.7	59.2
18.40	— .56	. . .	. . .	. . . .	. .	17 9 43.03	. . . .	5.91	12.00	56.8	64.9	59.9	59.6	60.3
18.93	+ 1.60	+ 2 59.28	— 0 1.17	358 55 19.35	60.27	10 21 44.32	+ 37 48 58.33	+ 8.93	—50.24	55.5	64.3	59.2	59.0	59.5
19.10	— 0.60	. . .	. . .	. . . .	. .	0 0 29.79	. . . .	8.86	+63.20	55.94	64.22	59.24	59.06	59.6
. .	. .	— 0 21.97	+ 1 7.11	49 35 53.54	. .									
. .	. .	9.55	1 7.07	52.69	. .						May 5.		(M.)	179
. .	. .	2.49	1 7.03	51.96	. .					60.9	59.6	63.8	59.7	61.0
19.12	+ 1 56.58	0.28	1 6.96	52.48	61.84	1 3 55.54	+ 88 29 31.16	64.62	+62.60	60.5	58.8	62.7	59.0	60.2
. .	. .	2.98	1 6.93	54.67	. .					60.2	58.1	63.5	58.5	60.6
. .	. .	11.46	1 6.89	55.75	. .					60.0	59.8	63.8	58.2	60.4
. .	. .	23.31	+ 1 6.82	55.18	. .					60.3	57.6	62.7	57.8	59.6
19.16	— 0 0.57	+14 27.93	— 0 19.82	337 52 5.08	. .	2 52 9.00	+ 16 29 47.04			60.38	58.78	63.30	58.64	60.2
		—17 21.90	20.36	337 20 14.19										
19.21	.82	. . .	. . .	. . . .	. .	5 5 23.96	. . . .	12.89			May 6.	3h.	(M.)	180
19.21	. .	+ 0 0.32	11.65	345 40 7.97	. .	5 12 25.66	+ 24 33 38.89			1.3	5.5	0.9	1.0	2.1
. .	.52	— 12.62	11.69	345 39 54.99	. .					0.5	4.5	0.0	0.2	1.3
19.29	.86	. . .	. . .	. . . .	. .	8 48 43.48	. . . .	11.35		0.8	4.7	0.2	0.0	1.4
19.31	.59	— 0.24	14.59	345 34 46.97	. .	9 37 10.77	+ 24 28 25.86	8.89	—39.79	1.0	5.6	1.3	1.5	2.3
19.32	4.29	. . .	. . .	. . . .	. .	10 0 14.44	. . . .	8.09		0.9	5.0	0.2	1.7	1.9
20.02	0.57	+14 27.81	18.38	338 25 14.92	55.67	2 59 53.63	+ 17 3 2.16			0.90	5.06	0.52	0.88	1.8
		—17 24.36	18.89	337 53 22.25										
20.06	— 32.25	. . .	. . .	. . . .	. .	5 5 24.12	. . . .	12.90						
20.06	0.60	. . .	. . .	. . . .	. .	5 16 37.67	. . . .	10.99			May 6.	11h.	(M.)	179
20.06	.59	+ 0 0.41	13.60	345 54 48.21	. .	5 22 51.13	+ 24 48 24.86			60.4	60.5	60.2	60.0	60.2
. .	. .	— 0 13.42	— 0 13.62	345 54 34.36						60.6	60.0	60.5	60.2	60.3
20.48	6.11	. . .	. . .	. . . .	. .	13 17 10.49	. . . .	6.85		60.8	60.5	61.1	60.7	60.7
20.48	0.88	. . .	. . .	. . . .	. .	13 41 32.33	. . . .	4.91		60.9	60.3	60.4	60.4	60.5
20.48	.58	. . .	. . .	. . . .	. .	13 47 25.77	. . . .	6.26		60.3	59.7	66.0	59.7	59.9
20.48	.58	. . .	. . .	. . . .	. .	14 8 43.00	. . . .	5.87		60.60	60.20	60.44	60.20	60.3
20.48	19.16	. . .	. . .	. . . .	. .	14 38 19.98	. . . .	5.52						
. .	0.88	. . .	. . .	. . . .	. .	. . . .	. . . .	4.94			May 8.	3h.3	(M.)	179
— 18.70	— 0 35.02	. . .	. . .	. . . .	. .	13 41 32.78	. . . .	+ 4.97		57.5	56.2	55.8	57.2	56.6
										57.0	56.8	55.2	56.8	56.4
										57.9	57.6	56.5	57.8	57.4
										57.6	56.6	55.5	57.1	56.7
										57.2	56.8	55.1	56.8	56.4
										57.44	56.80	55.62	57.14	55.6
											May 13.		(M.)	180
										3.0	2.5	3.6	4.0	3.2
										3.0	2.7	3.7	3.9	3.3
										3.0	2.4	3.0	4.0	3.1
										3.5	2.9	3.8	4.1	3.5
										3.2	2.3	3.5	3.5	3.1
										3.14	2.56	3.52	3.90	3.2

	Objects.	COR. IN R. Semi-diam.	Observed Semi-diam. Hor.	Vert.
		M. s.	M. s.	′ ″
1	Sun . .	. . .	1 5.69	15 56.12
2	Sun . .	. . .	1 6.63	15 55.44
15	Venus .	+ 0 0.47	. . .	0 6.49
40	Sun . .	. . .	1 6.63	15 56.34
44	Venus .	+ 0 0.48	. . .	0 6.92

17. Unsteady. Transit observation not good.
19. Through clouds.
32. Clock beat almost inaudible at wires I and II.
35. + 0″.04 applied for defective illumination.
43. Very faint.
44. + 0″.02 applied for defective illumination.
51. Dimmed by thin cloud.

DATE. 1847.	No.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
May 16	†1	η Bootis	10.5	22.4	33.5	45.3	57.4	9.0	20.4	13 47 45.52	. . .	.	.	.	.	. .				M.
	†2	α Bootis	27.3	39.5	51.0	2.8	14.2	25.8	37.6	14 9 2.60	341 5 31.8	31.0	34.3	36.4	33.37	. .	30.050	64.6	54.7	
	3	ε Bootis	3.0	15.5	27.2	40.0	52.8	5.0	17.5	14 38 40.15	. . .	.	.	.	.	. .				
	4	α^2 Libræ	..	25.0	35.7	47.6	58.8	10.2	21.4	14 42 53.12	. . .	.	.	.	.	. .				
	†5	β Libræ	35.2	46.9	58.0	9.2	20.0	31.1	42.5	15 9 8.99	. . .	.	.	.	.	. .				
	6	α Coronæ Bor.	..	10.0	22.0	34.6	46.4	59.0	11.4	15 28 40.57	348 20 30.0	31.0	33.8	34.5	32.32	. .	30.028	61.8	48.8	
	7	α Serpentis	..	..	54.5	5.0	16.4	28.2	38.7	15 37 16.56	328 1 35.2	37.1	41.5	42.2	39.01*d*	. .	30.024	60.8	48.0	
	8	Weisse XVI, 173	..	..	28.4	39.5	50.6	0.2	..	16 9 44.67	308 8 11.8	11.2	16.8	16.5	14.08	. .	30.016	59.8	48.8	
	9	Weisse XVI, 176 (Mic.)	..	..	..	..	..	..	22.5	16 10 22.50	"	"	"	"	"	32.470	" "	"	"	
	†10	γ Draconis	32.5	50.0	8.0	25.7	43.2	1.0	18.5	17 53 25.57	12 36 41.8	34.5	39.2	42.4	39.48	. .	30.008	59.5	45.8	
	†11	μ^1 Sagittarii	23.4	35.2	47.0	58.5	10.0	22.5	34.0	18 4 58.66	. . .	.	.	.	.	. .				
	†12	α Lyræ	25.0	39.0	53.2	7.2	21.0	35.5	49.2	18 32 7.16	359 45 7.4	4.2	7.4	8.0	6.75	. .			45.6	
	13	β Lyræ	8.0	21.2	35.0	48.2	1.0	14.2	27.2	18 44 47.83	354 17 50.0	47.0	48.8	51.5	49.32	. .	30.006	57.8	45.5	
	14	ζ Aquilæ	10.5	22.0	32.9	44.0	54.9	6.4	18.1	18 58 44.12	334 45 18.2	21.0	19.2	23.8	20.55	. .	30.002	58.0	45.3	
	15	γ Aquilæ	46.8	58.0	9.5	19.9	31.8	42.1	54.0	19 39 20.30	. . .	.	.	.	.	. .				
	16	α Aquilæ	6.9	18.7	28.6	40.2	51.6	2.4	13.3	19 43 40.25	329 35 7.6	6.8	12.2	11.0	9.40	. .	30.000	57.5	44.2	
17	17	Sun, 1st & N.L. (Mic. 6)	..	..	12.5	24.2	35.7	47.3	59.4	3 34 35.82	340 25 57.0	56.6	59.5	61.0	58.52	40.087	29.970	63.5	67.9	
	18	Sun, 2d & S.L. (Mic. 2)	4.2	16.0	27.4	39.2	50.5	2.3	14.0	3 36 39.43	"	"	"	"	"	35.490	" "	"	"	
	19	η Bootis	12.5	23.2	35.0	46.5	..	9.5	20.0	13 47 44.45	340 16 37.2	37.7	41.1	44.6	40.15	. .	29.926	62.0	53.1	Mu
	20	ε Bootis	3.5	16.8	28.5	40.5	53.5	5.5	18.4	14 38 40.96	348 49 54.2	50.1	52.8	57.6	53.67	. .	29.928	59.8	50.0	
	21	β Libræ	36.4	48.5	59.2	9.5	21.0	32.0	43.5	15 9 10.01	. . .	.	.	.	.	. .				
	22					44.5														M
	†23	Polaris					37.5			1 15 7.75	49 34 55.4	39.8	49.5	52.5	49.30	. .	30.000	59.5	60.0	
	24							36.0				64.0	50.2	59.5	64.2	59.47				
	25								33.0			35 15.4	2.2	10.0	15.0	10.65	. .	30.000	60.0	60.7	
18	†26	Sun, 1st & N.L. (Mic. 6)	47.0	0.0	12.0	22.9	34.0	45.7	57.2	3 38 22.69	340 39 21.4	21.0	22.7	26.1	22.80	40.116	29.882	63.0	66.1	
	27	Sun, 2d & S.L. (Mic. 2)	2.9	14.5	26.0	38.0	48.7	1.3	12.9	3 40 37.76	"	"	"	"	"	35.504	" "	"	"	
	28	Venus, 1st & N. L.	45.0	58.0	10.1	21.5	33.4	45.7	58.0	6 15 21.67	346 27 32.4	31.4	33.2	35.5	33.12	. .	29.834	67.2	68.6	
	29	δ Leonis	44.2	56.4	8.0	20.0	31.6	43.0	55.2	11 6 19.77	342 28 9.5	11.7	13.2	16.1	12.62	. .	29.830	64.5	61.1	
	†30	β Leonis	3.3	15.0	26.2	37.5	48.2	0.2	11.1	11 41 37.36	336 32 11.3	11.7	16.5	16.9	14.10	. .	29.830	63.5	58.1	
	31	12 Canum Ven.	..	..	0.5	14.4	28.4	42.2	56.3	12 49 28.36	. . .	.	.	.	.	. .				
20	32	Sun, 1st & N.L. (Mic. 6)	46.5	59.2	10.4	21.9	33.4	45.8	57.3	3 46 22.07	341 5 12.4	13.0	15.5	18.8	14.92	40.057	30.042	69.0	75.8	
	33	Sun, 2d & S.L. (Mic. 2)	1.8	13.9	25.9	37.0	49.0	0.4	12.6	3 48 37.23	"	"	"	"	"	35.528	" "	"	"	
	34	Venus, 1st & N. L.	9.3	22.0	33.8	46.4	58.2	10.9	22.6	6 25 46.10	346 25 39.6	37.8	38.7	43.2	39.81*d*	. .	30·020	69.5	79.0	
	35	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . .	"	"	"	"	"	39.725	" "	"	"	
	†36	α Canis Majoris	11.5	22.5	34.2	45.9	57.5	8.9	20.4	6 38 45.84	. . .	.	.	.	.	. .				
	37	β Leonis	4.0	15 8	27.4	38.4	49.6	1.0	12.2	11 41 38.32	336 32 14.8	15.6	18.0	20.9	17.32	. .	30.012	71.5	68.3	
	38								9.5		52 35 24.2	11.9	20.9	21.2	19.55	. .	30.020	70.5	65.4	
	39							11.0				36.3	23.2	29.2	34.3	30.75	. .			
	40						10.5					48.0	31.9	42.5	43.0	41.35	. .	30.026	70.0	65.4
	†41	Polaris, S. P.				8.0				13 4 4.07		43.5	30.3	39.0	41.2	38.50	. .			
	42				1.0							40.9	25.4	37.5	39.0	35.70	. .			
	43			52.0								33.1	21.2	30.4	33.5	29.55	. .			
	44		56.5									21.5	8.5	17.5	20.5	17.00	. .	30.028	69.9	64.9
	45	η Ursæ Majoris	3.0	19.8	37.0	54.0	11.0	28.5	45.9	13 41 54.17	11 10 60.0	49.8	53.5	59.8	55.78	. .	30.034	64.3	63.8	
	46	η Bootis	12.4	24.5	36.0	48.0	59.2	11.0	23.1	13 47 47.74	340 16 36.3	36.3	39.0	41.1	38.17*d*	. .	30.034	64.0	64.3	
	†47	α Bootis	30.0	41.9	53.2	5.0	16.8	27.8	40.0	14 9 4.96	341 5 34.5	35.1	39.0	41.9	37.62	. .	30.032	68.8	63.8	
	48	ε Bootis	5.0	18.0	29.9	..	54.1	7.4	19.4	14 38 42.30	348 49 57.0	55.2	57.8	61.5	57.87	. .	30.032	67.8	63.5	
21	†49	Sun, 1st & N.L. (Mic. 6)	47.4	59.4	11.3	23.1	34.2	46.3	57.6	3 50 22.73	341 17 35.2	34.8	38.9	38.0	36.72	40.081	30.032	68.9	77.2	
	50	Sun, 2d & S. L. (Mic. 2)	3.0	14.6	26.1	38.0	49.2	0.1	13.1	3 52 37.73	"	"	"	"	"	35.524	" "	"	"	
24	51	α Ursæ Maj.	26.0	50.0	13.4	37.2	0.9	25.2	49.0	10 54 37.39	23 40 33.5	22.9	29.4	33.6	29.76*d*	. .	29.980	72.0	72.4	
	52	δ Leonis	45.3	57.1	9.0	20.9	32.5	44.3	56.0	11 6 20.73	342 28 8.8	10.5	11.1	14.0	11.10	. .	29.982	72.0	71.8	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.
	h	s.	s.	s.	″	h.	revs.
May 17,	14	*f* 19.26	ς .026	—0.048	—0.531	—0.67	3 40.087
						13 40.143
18,	12	19.85	.023			.17	4 40.116
						13 40.160
20,	14	20.99	.015			.30	4 40.057
21,						.65	4 40.081
24,	12	20.64	.000			—0.36	

1 rev. = 34″.406.

1. Wire V recorded 56s.4.
2. " VII " 38.6.
10. " V " 42.2.
11. " III " 46.0.
12. Transit " 10. too much.
13. Wire IV " 46.2.
30. " III " 25.2.
41. " IV " 18.0.
47. " V " 15.8.

May 20, 14*h*. Found fixed horizontal wire slackened.

ASSUMED LATITUDE 38° 53′ 39″.25 NORTH.

COR. IN Æ.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		0° 0′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mea
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					°
− 18.71	− 0 35.58	+ 0 0.01	− 0 19.79	341 5 13.59	. .	13 47 26.23	. . . .	+ 6.27		May 17			(M.)	180
18.72	0.58	. . .	. . .	. . . . .	. .	14 8 43.30	+ 19 58 47.73	5.88	−51.88	6″2	4″4	5″8	6″8	5″8
18.73	0.60	. . .	. . .	. . . . .	. .	14 38 20.82	. . . .	5.51		6.2	4.5	5.8	6.5	5.7
18.73	6.23	. . .	. . .	. . . . .	. .	14 42 28.16	. . . .	6.90		5.5	4.2	4.3	6.5	5.1
18.73	0.53	. . .	. . .	. . . . .	. .	15 8 49.73	. . . .	6.83		4.9	3.9	3.7	6.5	4.7
18.73	6.77	. . .	12.05	348 20 20.28	5.11	15 28 15.07	+ 27 13 54.42	5.18	35.58	4.4	3.2	3.5	5.5	4.1
18.73	11.57	− .00	0 36.50	328 1 2.51	. .	15 36 46.26	+ 6 54 36.65	6.23	32.70	5.44	4.04	4.62	6.36	5.1
18.74	6.16	+ .01	1 14.24	308 6 59.85	. .	16 9 19.77	− 12 59 26.01	7.10	27.64					
18.74	34.27	− 4 2.39	− 1 14.43	308 3 52.69	. .	16 9 29.49	− 13 3 47.60	7.11	−27.62					
18.77	0.92	− 0.01	+ 0 13.14	12 36 52.61	. .	17 53 5.88	+ 51 30 26.75	1.73	+ 0.02	May 17		3h.7	(M.)	180
18.77	.55	. . .	. . .	. . . . .	. .	18 4 39.34	. . . .	7.96		1.9	1.0	0.5	1.2	1.1
18.78	.71	.00	− 0.35	359 45 6.50	. .	18 31 47.67	+ 38 38 40.64	3.81	10.39	2.1	2.2	1.8	2.2	2.0
18.78	.65	.00	5.87	354 17 43.45	. .	18 44 28.40	+ 33 11 17.59	4.40	12.16	2.0	2.0	0.7	1.9	1.6
18.79	.56	.00	27.71	334 44 52.84	. .	18 58 24.77	+ 13 38 26.98	5.97	11.84	2.4	1.0	0.5	2.0	1.4
18.80	.55	. . .	. . .	. . . . .	. .	19 39 0.95	. . . .	6.49		2.2	1.9	1.4	2.7	2.0
18.80	.55	.00	34.57	329 34 34.84	. .	19 43 20.90	+ 8 28 8.98	6.71	+22.11	2.12	1.62	0.98	2.00	1.6
18.99	12.22	+14 27.73	16.92	340 40 9.33	1.68	3 35 12.73	+ 19 17 53.29							
	− 0.58	−17 18.97	17.44	340 8 22.11						May 18		4h.	(M.)	180
19.25	+ 1.35	0 0.18	20.69	340 16 19.28	. .	13 47 26.55	+ 19 9 56.85	6.28	−49.80	0.8	0.7	1.5	2.0	1.2
19.27	− 0.60	.16	− 11.47	348 49 42.04	. .	14 38 21.09	+ 27 43 19.61	5.51	−44.23	1.3	1.0	1.5	2.5	1.5
19.29	0.53	. . .	. . .	. . . . .	. .	15 8 50.19	. . . .	6.83		0.9	0.8	0.5	2.0	1.0
		3.28	+ 1 6.96	49 35 52.98						1.5	1.2	1.4	2.9	1.7
19.55	. . .	11.49	1 6.92	54.90	1.45	1 4 1.52	+ 88 29 31.16	58.12	+65.33	1.12	0.92	1.23	2.35	1.4
. .	10 46.68	− 24.65	+ 1 6.88	52.88										
19.66	− 0 0.58	+14 28.24	− 0 16.73	340 53 34.31		3 39 9.78	+ 19 31 18.29			May 18		13h.	(M.)	179
		−17 18.97	17.23	340 21 46.50						61.2	58.9	60.5	62.4	60.7
19.72	.60	+ 0.09	18.62	346 27 14.59	. .	6 15 1.86	+ 25 20 52.43			60.9	59.2	60.0	62.3	60.6
19.83	.56	+ .21	17.90	342 27 54.93	0.76	11 5 59.38	+ 21 21 33.42	7.98	−50.67	61.2	59.6	61.0	62.0	60.9
19.85	.57	− .12	24.73	336 31 49.25	. .	11 41 16.94	+ 15 25 27.74	7.37	50.90	61.0	60.4	61.2	61.8	60.1
19.87	14.85	. . .	. . .	. . . . .	. .	12 48 53.64	. . . .	6.50		60.2	59.6	60.2	61.5	60.3
20.83	0.58	+14 28.11	16.07	341 19 26.96	5.15	3 47 8.24	+ 19 57 8.41			60.90	59.54	60.58	62.00	60.7
		−17 16.25	16.57	340 47 42.10										
20.87	.60	+ 0 0.02	11.62	346 25 28.21	. .	6 25 25.14	+ 25 18 56.38							
20.88	. .	− 11.40	11.62	346 25 16.79						May 20		4h.	(M.)	180
20.88	.54	. . .	. . .	. . . . .	. .	6 38 34.42	. . . .	7.77		5.8	6.2	7.3	8.9	7.0
20.95	− .57	− 0.07	− 0 24.38	336 31 52.87	5.15	11 41 16.80	+ 15 25 26.96	7.39	−51.09	5.2	5.7	5.4	6.4	5.6
. .	. .	+ 23.26	+ 1 13.76	52 36 56.57	. .					5.0	4.3	5.2	6.2	5.1
. .	. .	10.40	1 13.77	54.72	. .					4.8	4.2	4.2	5.2	4.6
20.97	+ 22.01	+ 2.67	1 13.77	57.79	. .					4.0	4.0	4.1	5.1	4.3
. .	. .	− 0.04	1 13.78	52.24	. .	13 4 5.11	+ 88 29 31.89	57.34	+65.82	4.96	4.88	5.28	6.36	5.3
. .	. .	+ 2.20	1 13.79	51.69	. .									
. .	. .	9.27	1 13.79	52.61	. .									
. .	. .	21.66	1 13.81	52.47	. .					May 20		11h.	(M.)	180
20.98	− 0.88	0.11	+ 0 11.22	11 11 6.89	. .	13 41 32.31	+ 50 4 40.98	5.02	−56.39	4.5	4.0	5.5	6.0	5.0
20.98	.58	+ .01	− 20.33	340 16 17.85	. .	13 47 26.18	+ 19 9 51.94	6.29	50.28	5.8	5.6	6.8	6.5	6.1
20.99	.58	− .03	19.43	341 5 18.16	. .	14 8 43.39	+ 19 58 52.25	5.88	52.55	4.5	3.0	5.8	4.5	4.9
20.99	.59	− .16	11.21	348 49 46.56	. .	14 38 20.72	+ 27 43 20.65	5.51	44.88	5.0	4.5	4.4	6.0	5.3
21.19	.58	+14 28.10	15.82	341 31 49.00	3.87	3 51 8.46	+ 20 9 31.47			4.92	4.30	5.64	5.76	5.1
		−17 17.22	16.31	341 0 3.19										
20.64	1.24	0 0.00	24.41	23 40 54.17	. .	10 54 15.51	+ 62 34 34.78	9.23	62.19	May 21		4h.	(M.)	180
− 20.64	− 0 0.58	+ 0 0.14	− 0 17.61	342 27 53.63	. .	11 5 59.51	+ 21 21 34.34	+ 8.06	−51.19	3.8	3.5	3.3	3.9	3.6
										4.0	3.0	3.1	3.6	3.4
										3.8	3.0	3.0	3.7	3.3
										4.7	4.2	4.0	4.6	4.3
										4.9	4.2	4.2	4.9	4.5
										4.24	3.58	3.52	4.14	3.8

Object.	COR IN Æ.	Observed Semi-Diam.	
	Semi-Diam.	Hor.	Vert.
	m. s.	m. s.	′ ″
Sun . .	. .	1 8.12	15 53.61
Sun . .	. .	1 7.53	15 53.85
Venus .	+ 0 0.51		
Sun . .	. .	1 7.58	15 52.43
Venus .	+ 0 0.51		0 5.71
Sun . .	. .	1 7.50	15 52.90

5, 11, 12. Very unsteady.
23. Divisions under mic. C. very indistinct.
26. Beat of the clock not heard well, through noise of masons at work.
36. Very faint. Through clouds.

May 24		10h.5	(M.)	180
60.4	59.0	58.2	60.5	59.5
58.8	57.3	57.0	59.5	58.3
59.2	58.1	57.9	59.8	58.7
59.1	58.0	57.6	59.0	58.4
59.0	57.9	57.5	58.9	58.3
59.30	58.06	57.64	59.54	58.6

DATE. 1847.	No. for ref.		OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS. A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	THER'S Ex.	Observer.
				s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
May 24	1	β	Leonis	3.5	15.4	26.5	38.0	49.2	0.5	..	11 41 32.18	. . .	.	.	.	.	.	.	.	.	M
	2	γ	Ursæ Majoris	11.5	31.0	49.6	8.7	27.0	46.6	5.5	11 46 8.56	15 38 58.0	42.7	51.2	52.8	51.17	. .	29.980	71.5	68.8	
	3	α	Virginis	58.5	10.0	..	31.5	..	54.5	5.6	13 17 32.02	. . .	.	.	.	.	.	.	.	.	
25	4		Sun, 2d L.	7.1	19.0	30.5	42.3	53.9	6.2	17.3	4 8 42.33	. . .	.	.	.	.	.	.	.	.	
27	5							52.0				. . .	.	.	.	.	.	.	.	.	
	†6		Polaris						53.0		1 18 49.67	. . .	.	.	.	.	.	.	.	.	
	7									44.0		. . .	.	.	.	.	.	.	.	.	
28	†8		Sun, 2d & S. L. (Mic. 2)	17.0	29.2	40.9	52.0	4.2	16.0	28.1	4 20 52.49	342 32 38.4	39.4	42.4	43.9	41.02	39.000	30.200	71.2	77.5	
	9	12	Canum. Ven.	..	..	3.0	17.5	30.7	45.2	59.4	12 49 31.16	. . .	.	.	.	.	.	.	.	.	
	10	α	Virginis	0.0	11.3	22.4	33.5	44.6	55.2	6.4	13 17 33.35	310 46 13.7	13.5	18.8	19.9	16.47	. .	30.152	72.4	67.9	
	†11	η	Ursæ Majoris	4.4	22.0	38.8	56.0	13.0	29.9	47.4	13 41 55.93	11 11 38.5	29.4	36.9	40.0	36.20	. .	30.154	72.2	67.0	
	12	α	Bootis	30.7	42.8	54.0	5.5	17.4	29.3	41.1	14 9 5.83	. . .	.	.	.	.	.	.	.	.	
29	13	η	Ursæ Majoris	4.5	21.5	38.8	55.0	12.0	29.5	47.0	13 41 55.47	. . .	.	.	.	.	.	29.962	68.0	64.6	M
	14	α	Bootis	31.0	42.5	54.5	6.0	17.5	29.5	41.5	14 9 6.07	. . .	.	.	.	.	.	29.962	67.8	64.0	
June 2	†15		Sun, 1st & N. L. (Mic. 6)	24.8	37.0	48.4	0.2	11.8	24.0	34.8	4 39 0.14	343 18 21.5	24.5	26.9	29.7	25.15	40.214	30.012	72.8	74.4	M
	16		Sun, 2d & S. L. (Mic. 2)	40.6	52.3	5.0	17.4	29.2	41.0	52.9	4 41 16.91		"	"	"	"	35.755	"	"	"	
	17	α	Orionis	44.2	55.5	6.0	17.3	28.2	39.1	50.7	5 47 17.27	328 29 6.0	5.0	7.8	9.6	7.15	. .	30.014	73.0	75.8	
3	18	α	Virginis	1.5	12.2	25.0	34.0	45.0	56.2	7.8	13 17 34.24	. . .	.	.	.	.	.	.	.	.	M
	19	η	Bootis	14.6	26.2	37.6	49.5	2.5	12.0	24.0	13 47 49.20	340 16 38.9	38.5	42.4	43.5	40.83*d*	. .	29.936	73.8	70.5	
	20	α	Bootis	31.2	42.8	54.5	6.2	..	29.8	41.5	14 9 6.25	. . .	.	.	.	.	.	.	.	.	
	21	ε	Bootis	6.2	19.6	31.2	44.0	56.2	8.8	21.2	14 38 43.89	348 49 54.8	51.1	54.6	56.6	54.27	. .	29.952	72.9	69.7	
	22	α	Coronæ Borealis	1.5	14.5	..	39.0	50.0	2.5	15.5	15 28 40.50	348 20 30.7	31.5	31.5	35.6	32.32*d*	. .	29.960	72.0	68.0	
6	23	α	Scorpii	51.3	4.6	16.2	28.5	40.0	55.0	5.2	16 20.28.40	. . .	.	.	.	.	.	.	.	.	
	†24	β	Draconis	31.2	49.0	7.0	25.1	43.2	1.0	18.9	17 27 25.06	13 31 14.8	6.3	12.4	16.0	12.37	. .	30.118	69.5	57.2	M
	†25	γ	Draconis	37.0	55.0	12.2	30.0	46.9	5.1	22.5	17 53 30.03	12 36 47.2	37.6	44.7	46.7	44.05	. .	30.118	69.0	57.1	
	26	δ	Ursæ Minoris	14.5							18 17 50.75	47 43 15.4	9.0	11.5	13.5	12.35	. .	30.110	67.8	56.0	
	27						27.0					42 67.5	55.6	63.1	65.2	62.85	. .	.	.	.	
	†28	α	Lyræ	29.0	44.0	57.2	11.9	25.2	40.0	53.5	18 32 11.54	. . .	.	.	.	.	.	.	.	.	
	†29	ζ	Aquilæ	14.5	25.4	37.0	48.5	59.7	10.9	22.0	18 58 48.29	. . .	.	.	.	.	.	.	.	.	
7	30	α	Ursæ Majoris	27.5	52.0	15.7	39.6	2.8	27.2	50.2	10 54 39.29	23 41 16.8	5.0	12.5	14.7	12.25	. .	30.160	73.0	73.8	
	31	γ	Ursæ Majoris	13.9	33.7	52.0	11.3	29.4	48.7	7.6	11 46 10.94	15 39 35.9	26.3	31.8	34.9	32.22	. .	30.168	73.0	72.5	
	32	β	Corvi	12.3	24.0	35.8	47.9	59.7	11.1	23.6	12 26 47.77	298 35 23.1	23.1	25.6	29.7	25.37	. .	30.172	73.0	70.9	
	33									33.0		52 34 62.4	49.5	57.0	60.0	57.22	. .	30.170	72.5	70.2	
	34								30.0			35 15.4	5.0	10.7	13.7	11.20	. .	.	.	.	
	35							27.0				23.7	12.7	18.0	21.8	19.05	. .	30.168	72.2	69.4	
	36		Polaris, S. P.				21.0				13 4 21.51	24.4	13.8	19.0	22.4	19.90	. .	.	.	.	
	37					19.0						21.0	9.2	14.9	20.0	16.27	. .	30.164	72.0	68.4	
	38				8.0							16.4	5.8	12.5	15.0	12.42	. .	.	.	.	
	39			13.0								34 64.0	52.4	60.0	63.2	59.90	. .	30.166	72.0	68.0	
	40	η	Bootis	15.2	27.0	38.5	50.0	1.1	12.9	24.9	13 47 49.94	. . .	.	.	.	.	.	.	.	.	
	41	ε	Bootis (Mic.)	8.2	20.0	32.1	44.4	56.8	9.1	21.0	14 38 44.51	348 48 13.4	13.3	12.4	15.6	13.67	43.160	30.168	70.5	64.3	
	42	β	Libræ	40.2	51.4	2.1	13.4	24.0	35.2	46.2	15 9 13.22	312 29 4.3	3.2	8.7	8.5	6.17	. .	30.174	64.9	70.0	
	43	α	Coronæ Borealis	2.4	14.8	27.0	39.0	51.4	3.4	16.4	15 28 39.20	348 21 12.4	13.0	15.4	16.0	14.20	. .	30.166	69.7	64.8	
	44	α	Serpentis	37.6	49.0	0.0	11.0	21.9	33.0	43.8	15 37 10.90	328 2 14.7	14.9	18.5	18.4	16.62	. .	30.178	69.5	64.7	
	45	β^1	Scorpii	25.0	37.0	48.2	0.1	10.2	22.9	35.3	15 56 59.81	301 45 34.3	34.2	39.9	42.2	37.65	. .	30.174	69.0	64.4	
8	46		Sun, 1st L.	6.0	18.2	30.4	42.4	54.2	6.0	18.2	5 3 42.20	. . .	.	.	.	.	.	.	.	.	
	47		Sun, 2d L.	24.1	35.9	47.8	0.0	11.5	22.9	35.1	5 5 59.61	. . .	.	.	.	.	.	.	.	.	
9	48									35.5		52 34 64.9	54.5	59.5	62.2	60.28	. .	30.066	74.5	76.9	
	49								31.0			35 18.5	7.2	12.0	17.2	13.72	. .	.	.	.	
	50							32.0				24.8	15.8	20.0	24.5	21.28	. .	30.070	74.5	76.4	
	51		Polaris, S. P.				22.5				13 4 25.09	28.0	17.8	21.8	27.2	23.70	. .	.	.	.	
	52					23.0						25.8	14.2	19.8	24.8	21.75	. .	30.070	75.0	76.5	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.
	h.	s.	s.	s.	″	h.	revs.
May 25	. .	g .004	—0.048	—0.531			
27	. .	.010			—0.56		
28, 14	f 22.64	.010			0.56		
29, 14	22.26	.008					
June 2, 6	23.06	.002			1.00	5	40.214
3, 14	22.61	.000			0.34		
6, 18	22.63	.020			0.64		
7, 14	23.35	.024			— 0.58		
8	. .	g .020					

1 rev. = 34″.406.

11. Wires V, VII recorded 12s.0, 46s.4.
25. Wire II recorded 54s.0.
29. Wires V, VI, VII recorded 0s.7, 11s.9, 22s.0.
30. Wire V recorded 3s.8.
41. Wire VII recorded 21s.0.

May 24, 12h. Found fixed horizontal wire slackened
28, June 7 and 9. Used mic. wire 4 at 39r.00 instead of fixed wire.

ASSUMED LATITUDE 38° 53′ 39″.25 NORTH.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mer
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					
— 20.64	+ 0 5.11	. . .	. . .	. . . .	. .	11 41 16.65	. . . .	+ 7.43		May	28, 4h.	5m.	(M.)	° 179
20.64	— 1.00	+ 0 0.01	+ 0 15.71	15 39 6.89	. .	11 45 46.92	+ 54 32 47.50	8.11	—63.15					
20.64	0.54	. . .	. . .	. . . .	. .	13 17 10.83	. . . .	6.90		40″2	40″3	39″1	41″0	40″
20.70	.58	. . .	. . .	. . . .	. .	4 7 13.18				40.9	40.5	40.2	41.3	40.
										40.2	39.0	40.2	40.4	39.
22.51	14 14.46	. . .	. . .	. . . .	. .	1 4 13.72	. . . .	51.89		40.1	39.2	39.5	41.0	39.
										39.8	39.7	39.0	40.4	39.
										40.24	39.74	39.60	40.82	40.
22.53	0 0.58	—14 40.47	—16 3.03	342 33 33.16	40.10	4 19 21.51	+ 21 26 32.31							
22.63	14.85	. . .	. . .	. . . .	. .	12 48 53.68	. . . .	6.63	59.28					
22.63	0.53	+ 0 0.39	— 1 5.43	310 45 11.43	. .	13 17 10.19	— 10 21 49.24	7.93	44.86	May	28,	12h.	(M.)	179
22.64	.88	— .12	+ 0 11.19	11 11 47.27	. .	13 41 32.41	+ 50 4 47.60	5.13	58.24					
22.64	.58	. . .	. . .	. . . .	. .	14 8 42.61	. . . .	5.91	—53.86	39.8	39.6	39.0	40.0	39.
										39.0	40.0	39.4	40.0	39.
22.26	.88	. . .	. . .	. . . .	. .	13 41 32.33	. . . .	5.14		39.5	40.5	40.3	41.0	40.
22.26	.58	. . .	. . .	. . . .	. .	14 8 43.23	. . . .	5.91		40.9	39.7	39.9	40.9	40.
										39.8	39.4	39.0	40.8	39.
23.06	.59	+14 28.33	— 14.03	343 32 39.95	57.22	4 39 44.87	+ 22 10 30.25			39.80	39.84	39.52	40.54	39.
		—17 14.63	14.52	343 0 56.50										
23.06	.54	0 0.29	33.96	328 28 32.90	. .	5 46 53.67	+ 7 22 14.93	9.44	+14.12					
22.61	.53	. . .	. . .	. . . .	. .	13 17 11.20	. . . .	6.96						
22.61	.58					13 47 26.01	+ 19 9 58.49	6.36	—51.42	June	2, 5h.		(M.)	179
22.61	.58	.01	19.98	340 16 20.84	61.60	14 8 43.06	. . . .	5.94						
22.61	.60	.12	11.04	348 49 43.35	. .	14 38 20.68	+ 27 43 21.00	5.54	47.79	56.7	55.8	55.2	57.4	56.
										58.2	57.0	57.2	58.2	57.
22.61	2.66	.00	11.58	348 20 20.74	. .	15 28 15.23	+ 27 13 58.39	5.13	39.68	58.0	56.9	56.9	58.0	57.
22.60	0.57	. . .	. . .	. . . .	. .	16 20 5.23	. . . .	7.51		57.2	56.7	55.5	57.3	56.
22.62	.94	+ .23	— 13.85	13 31 26.45	60.16	17 27 1.50	+ 52 25 5.54	1.26	13.91	58.7	57.3	57.4	58.8	58.
										57.76	56.74	56.44	57.94	57.
22.60	— .92	— .16	+ 0 12.89	12 36 56.78	. .	17 53 6.51	+ 51 30 35.37	+ 1.36	— 6.67					
. .	. . .	— 9.37	1 3.40	47 44 6.38	. .									
22.61	+ 4 27.32	+ .22	+ 1 3.39	6.46	. .	18 21 55.46	+ 86 35 45.51	— 71.39	+ 1.70					
										June	2.		(Mu.)	179
22.61	— 0 0.71	. . .	. . .	. . . .	. .	18 31 48.22	. . . .	+ 3.36		62.8	60.9	60.5	65.0	62.
22.62	.56	. . .	. . .	. . . .	. .	18 58 25.11	. . . .	5.58		62.0	60.3	60.6	64.7	61.
22.28	1.24	— 0 0.18	— 0 24.50	23 41 36.60	38.85	10 54 14.77	+ 62 34 37.00	10.77	—62.50	64.1	60.5	60.0	64.8	61.
23.29	1.00	+ .10	+ 15.69	15 39 48.01	. .	11 45 46.65	+ 54 32 48.41	8.48	64.45	61.3	60.1	59.9	63.6	61.
23.31	— 0.56	— .11	— 1 42.75	298 33 42.51	. .	12 26 23.90	— 22 33 17.59	7.04	—41.64	60.8	59.5	59.2	63.4	60.
. .	. . .	+ 23.04	+ 1 13.42	52 36 33.68	. .					61.80	60.26	60.04	64.30	61.
. .	. . .	10.42	1 13.49	35.11	. .									
. .	. . .	2.76	1 13.54	35.35	. .									
23.33	+ 21.97	.08	1 13.58	33.56	. .	13 4 20.15	+ 88 29 25.19	45.17	+68.45	June	3.		(Mu.)	179
. .	. . .	2.35	1 13.62	32.24	. .					38.3	38.2	38.4	38.0	38.
. .	. . .	9.40	1 13.67	35.49	. .					37.9	36.9	37.0	37.4	37.
. .	. . .	21.80	+ 1 13.72	35.42	. .					37.4	37.6	37.2	36.9	37.
										37.87	37.56	37.53	37.43	37.
23.35	— 0 0.58	. . .	. . .	. . . .	. .	13 47 26.01	. . . .	6.39						
23.36	.60	+ 0.04	— 0 11.28	348 50 25.57	. .	14 38 20.55	+ 27 43 25.95	5.56	—48.60					
23.38	.53	.05	1 1.81	312 18 4.41	. .	15 8 49.31	— 8 48 55.29	6.75	37.32					
23.39	.60	.03	0 11.73	348 21 2.50	. .	15 28 15.21	+ 27 14 2.90	5.13	40.59	June	6.		(M.)	179
23.39	.54	— .10	35.50	328 1 41.02	. .	15 36 46.97	+ 6 54 41.42	6.12	35.74	60.7	59.0	60.5	61.0	60.
23.40	.55	+ .08	— 1 31.70	301 44 6.03	. .	15 26 35.96	— 19 22 53.57	7.16	—29.78	60.1	58.8	59.7	60.3	59.
										60.6	58.8	60.9	61.2	60.
23.71	— .59	. . .	. . .	. . . .	. .	5 4 26.60				60.5	59.0	61.0	61.2	60.
. .	. . .	+ 22.99	+ 1 12.25	52 36 35.52	. .					60.0	58.9	60.4	60.6	59.
. .	. . .	10.37	1 12.29	36.38	. .					60.38	58.90	60.50	50.86	60.
. .	. . .	2.64	1 12.33	36.25	. .									
— 24.06	+ 21.96	.01	1 12.34	36.05	38.47	13 4 22.99	+ 88 29 22.95	+ 43.53	+68.75	June	7.		(M.)	179
. .	. . .	+ 0 2.32	+ 1 12.33	35.80	. .					41.1	39.0	38.1	38.9	39.
										39.0	38.7	38.1	39.1	38.
										39.0	38.7	37.8	33.7	38.
										38.9	39.0	37.9	39.0	38.
										39.0	38.8	32.7	39.0	38.
										39.40	38.84	37.92	38.94	38.

Object.	COR IN R.	Observed Semi-Diam.	
	Semi-Diam.	Hor.	Vert.
	m. s.	m. s.	′ ″
Sun . .	— 1 7.87		
Sun . .	1 8.08		
Sun . .	. . . .	1 8.38	15 51.72
Sun . .	. . . .	1 8.70	

6, 8, 15, 24. Unsteady.
15. Observer disturbed by persons entering the room.

June	9, 13h.	5m.	(M.)	179	
38.4	38.9	38.4	38.4	38.	
39.2	38.5	38.4	38.7	38.	
38.2	37.6	37.8	38.5	38.	
38.2	37.8	38.4	38.4	38.	
38.3	37.9	38.2	38.4	38.	
38.46	38.14	38.24	38.48	38.	

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	THER'S Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	*Revs.*	*In.*	°	°	
June 9	1	Polaris, S. P.		13.0							52 35 19.5	9.0	14.0	18.8	15.32	. .				M
	2		18.0								34 66.8	54.8	62.0	66.3	62.47	. .	30.080	75.0	76.4	
11	3	*a* Bootis	33.5	45.2	57.0	8.0	20.2	32.0	43.2	14 9 8.44	. . .	.	.	.	.	. .				
	†4	*γ* Aquilæ	53.8	5.0	15.9	27.1	38.2	49.3	1.0	18 39 27.19	. . .	.	.	.	.	. .				
	5	*α* Aquilæ	13.9	25.0	36.0	46.9	58.0	8.9	20.2	19 43 46.99	. . .	.	.	.	.	. .				
	†6	*β* Aquilæ	43.0	53.9	5.0	15.9	27.0	38.0	49.0	19 48 16.00	. . .	.	.	.	.	. .				
13	7	*η* Ursæ Majoris	7.4	24.8	41.9	58.8	15.9	33.0	50.7	13 41 58.93	. . .	.	.	.	.	. .				
	8	*η* Bootis	18.0	29.5	40.9	52.7	4.0	16.1	27.4	13 47 52.66	340 16 48.7	48.9	51.6	54.2	50.85	. .	29.690	74.1	70.0	
	9	*α* Bootis	35.0	46.2	58.0	9.8	21.0	32.4	44.2	14 9 9.37	341 5 41.3	41.7	45.0	46.5	43.62	. .	29.692	73.8	68.7	
	10	*β* Libræ	43.0	54.2	5.0	16.8	27.2	38.5	49.3	15 9 16.29	312 18 33.8	34.9	39.2	41.1	37.25	. .	29.690	72.8	67.1	
	†11	*α* Coronæ Bor.	4.5	17.4	29.2	41.4	54.0	6.4	..	15 28 35.48	. . .	.	.	.	.	. .	29.674	72.2	66.5	
15	12	*α* Ursæ Majoris	..	..	..	43.0	6.5	29.9	54.2	10 55 18.40	23 40 43.3	34.4	40.1	42.7	40.12	. .	29.904	70.5	69.9	
	13	*δ* Leonis	51.3	3.7	15.2	27.1	38.3	50.0	2.4	11 6 26.72	. . .	.	.	.	.	. .				
	14	*β* Leonis	10.0	21.2	33.1	44.0	55.8	6.8	17.8	11 41 44.10	336 32 24.4	23.8	27.1	27.2	25.62	. .	29.928	70.4	68.7	
	15								39.5		52 35 29.0	18.0	24.2	26.5	24.42	. .	29.950	69.5	65.5	
	16							38.0				43.2	32.2	38.2	42.5	39.02	. .			
	17						39.0					51.7	40.9	46.2	50.0	47.20	. .			65.0
	18	Polaris, S. P.				34.0				13 4 32.09		54.5	42.2	47.5	52.8	49.25	. .	29.952	69.0	64.4
	19				29.0							52.2	41.0	46.2	49.3	47.17	. .			
	20			20.0								45.1	33.2	40.5	42.5	40.32	. .			
	21		25.5									31.4	21.0	27.0	30.2	27.40	. .	29.960	68.5	63.0	
	22	*η* Ursæ Majoris	8.0	26.0	42.8	0.0	16.9	34.0	50.9	13 41 59.80	11 11 9.9	3.2	8.2	8.8	7.51*d*	. .	29.982	63.0	61.9	
	23	*α* Bootis	36.0	47.8	58.9	11.0	22.5	34.5	45.9	14 9 10.94	341 5 41.9	41.6	45.2	47.2	43.97	. .	29.978	62.8	61.4	
	24	*ε* Bootis	11.0	23.2	35.8	48.0	0.0	13.1	24.9	14 38 48.00	348 50 2.7	5.2	5.7	2.4	4.00	. .	29.998	62.6	60.9	
	25	*β* Libræ	44.2	55.3	..	17.4	28.5	39.8	50.7	15 9 19.32	312 18 35.7	37.4	41.8	38.0	38.22	. .	29.998	66.0	57.5	
	26	*α* Coronæ Bor.	5.8	18.1	30.8	43.1	55.2	7.4	20.3	15 28 42.96	348 20 43.5	44.8	47.0	48.2	45.87	. .	30.002	66.0	59.5	
	27	*α* Serpentis	40.9	52.7	3.2	14.7	25.8	36.0	47.5	15 37 14.40	328 1 45.7	47.3	51.6	51.9	49.12	. .	30.012	66.0	59.0	
	28	*ζ* Ursæ Minoris	29.2	24.2	17.5	11.0	5.0	59.2	52.5	15 50 11.23	. . .	.	.	.	.	. .				
	29	*β*[1] Scorpii	28.9	40.7	52.0	4.2	15.3	27.2	38.9	15 57 3.89	301 45 4.8	11.0	4.2	10.5	7.62	. .	30.010	65.8	58.5	
	30	*δ* Ophiuchi	17.4	29.0	39.9	51.1	1.8	12.5	24.2	16 6 50.76	317 49 34.6	35.2	40.0	40.7	37.61*d*	. .	30.010	65.8	58.4	
17	31	Sun, 1st & N. L. (Mic. 6)	30.4	42.8	54.2	6.8	18.4	30.5	42.0	5 41 6.44	344 31 26.1	25.2	27.5	30.7	27.36	39.900	30.196	71.5	76.8	
	32	Sun, 2d & S. L. (Mic. 2)	48.7	1.0	11.9	24.8	36.2	48.0	0.2	5 43 24.40	" " "	"	"	"	"	35.524	"	"	"	
	33	*β* Leonis	11.2	22.9	34.0	45.5	56.4	8.4	19.8	11 41 45.46	336 32 24.2	23.8	27.2	27.3	25.62	. .	30.190		75.0	
	†34	*β* Corvi	17.2	29.0	40.9	53.0	4.2	..	..	12 26 40.82	. . .	.	.	.	.	. .				
	35								42.0		52 35 34.0	21.0	29.8	31.5	29.07	. .	30.200	74.8	73.0	
	36							38.5				44.5	33.8	39.9	42.0	40.05	. .			
	37						40.0					53.4	39.7	48.0	50.0	47.78	. .	30.208	74.5	72.3
	38	Polaris				32.5				13 4 33.19		55.0	43.0	48.2	51.1	49.32	. .			
	39				30.5							53.9	41.0	48.6	51.0	48.63	. .	30.204	74.0	71.3
	40			23.5								45.7	33.4	39.7	42.5	40.32	. .			
	41		25.5									33.7	21.4	28.0	31.8	28.73	. .	30.202	73.8	70.6
	42	*η* Bootis	20.4	32.0	43.8	55.0	6.2	18.1	29.7	13 47 55.03	340 16 49.7	48.5	51.4	52.7	50.57	. .	30.204	73.2	68.7	
	†43	*α* Bootis	..	..	..	..	..	..	..	. . . .	341 5 41.7	43.4	45.5	46.3	44.22	. .	30.206	72.5	66.9	
	44	*ε* Bootis	12.0	25.2	37.1	49.2	2.0	14.4	26.7	14 38 49.52	. . .	.	.	.	.	. .				
	†45	α^2 Libræ	23.0	..	45.9	56.0	8.5	19.8	30.9	14 42 60.68	. . .	.	.	.	.	. .				
21	46	Sun, 1st and N. L.	9.0	20.5	32.8	44.6	56.4	9.5	21.2	5 57 44.86	. . .	.	.	.	.	. .				
	47	Sun, 2d & S. L.	27.0	39.2	51.2	3.0	14.9	26.8	38.9	6 0 3.00	. . .	.	.	.	.	. .				
	48	*α* Canis Minoris	13.7	25.0	35.9	..	58.0	9.0	19.8	7 31 46.90	. . .	.	.	.	.	. .				
	49	*β* Geminorum	48.8	1.7	13.5	26.0	38.8	..	4.0	7 36 22.13	. . .	.	.	.	.	. .				
23	50	Sun, 1st L.	..	40.8	52.9	4.2	16.2	28.2	40.3	6 6 10.43	. . .	.	.	.	.	. .				
	†51	Sun, 2d L.	45.9	58.8	10.4	22.5	34.0	45.8	58.0	6 8 22.20	. . .	.	.	.	.	. .				
	52	*α* Canis Minoris	..	..	36.2	47.0	58.0	9.0	20.5	7 31 58.14	. . .	.	.	.	.	. .				

DATE.	CLOCK +*m*.	Hourly Rate.	VALUE OF *n*.	VALUE OF *c*.	Error of Runs.	Mic. coin. At	Mic. coin.
h.	*s.*	*s.*	*s.*	*s.*	″	*h.*	*revs.*
June 11, 20	*f* 24.87	*g* 0.020	—0.048	—0.531			
13, 14	25.70	.024	+0.173	—0.752	—0.17		
15, 14	26.91	.028			0.04		
17, 14	28.19	.020			—1.25		
21, 7	28.32	.010					
23, 16	28.62	*g* 0.004					

1 rev. = 34″.406

4. Wires IV, V, VI, VII have been each increased 1*s*.
6. Transit recorded 30*s*. more.
51. Wire VII recorded 57*s*.0

June 13, 15, 17. Used mic. wire 4 at 39*r*. 90, instead of fixed wire.

ASSUMED LATITUDE 38° 53′ 39″.25 NORTH.

No. for ref.	COR. IN Æ. Clock.	COR. IN Æ. Inst.	COR. IN DEC. Inst.	COR. IN DEC. Object.	Corrected Reading.	Zenith Point.	OBSERVED R. A.	OBSERVED DEC.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 DEC.	NADIR POINT. A.	B.	C.	D.	Mean.
	s.	M. s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″	June 11,			(M.)	° ′
1	. .	. .	+ 0 9.47	+ 1 12.33	52 36 37.12	. .									180 0
2	. .	. .	21.96	+ 1 12.35	36.78	. .									
3	— 24.75	0 0.58	. .	. .	. . . .	. .	14 8 43.11	. . . .	— 5.99		10″9	9″2	10″5	11″2	10″45
4	24.86	.55	. .	. .	. . . .	. .	19 39 1.78	. . . .	5.85		10.4	9.0	10.2	10.5	10.02
5	24.86	.55	. .	. .	. . . .	. .	19 43 21.58	. . . .	6.07		9.8	9.4	10.0	10.2	9.50
6	24.86	.54	. .	. .	. . . .	. .	19 47 50.60	. . . .	6.15		9.4	8.5	9.3	10.0	9.30
7	25.69	.96	. .	. .	. . . .	. .	13 41 32.28	. . . .	5.41		10.0	9.0	10.5	9.8	9.83
8	25.69	.74	+ 0.02	— 0 19.86	340 16 31.01	9.27	13 47 26.23	+ 19 10 0.99	6.44	—53.81	10.10	9.02	10.10	10.34	9.89
9	25.70	.74	— .01	0 19.02	341 5 24.59	. .	14 8 42.93	+ 19 58 54.57	6.01	56.30					
10	25.72	— .78	+ .03	— 1 1.11	312 17 36.17	. .	15 8 49.79	— 8 48 53.85	6.75	37.64	June 13,			(M.)	180 0
11	25.73	+ 5.40	. .	. .	. . . .	. .	15 28 15.15	. . . .	5.15		10.0	8.4	9.7	9.5	9.40
12	26.80	— 36.98	.00	+ 0 24.47	23 41 4.59	8.69	10 54 14.62	+ 62 34 35.15	11.04	62.26	9.7	9.4	10.0	9.4	9.63
13	26.81	0.74	. .	. .	. . . .	. .	11 5 59.17	. . . .	8.34		9.4	8.0	9.2	9.4	9.00
14	26.82	— .74	.00	— 0 24.30	336 32 1.32	. .	11 41 16.54	+ 15 25 31.88	7.70	—53.25	9.2	8.5	9.1	9.0	8.95
15	. .	. .	23.15	+ 1 13.56	52 37 1.13	. .					9.4	8.9	9.6	9.5	9.35
16	. .	. .	10.40	1 13.60	3.02	. .					9.54	8.64	9.52	9.36	9.27
17	. .	. .	2.66	1 13.66	3.52	. .									
18	26.87	+ 22.02	0.01	1 13.70	2.96	. .	13 4 27.24	+ 88 29 26.49	38.17	+ 69.07	June 15,			(M.)	180 0
19	. .	. .	2.29	1 13.75	3.21	. .					9.2	8.4	8.5	9.8	8.98
20	. .	. .	9.43	1 13.85	3.60	. .					8.5	8.0	8.2	9.5	8.55
21	. .	. .	21.92	+ 1 13.94	3.26	. .					8.6	8.2	8.1	8.7	8.40
22	26.88	— 0.96	0.00	— 0 11.24	11 11 18.75	. .	13 41 31.96	+ 50 4 49.31	5.50	—61.65	9.1	8.2	8.8	9.0	8.77
23	26.89	.74	.00	19.49	341 5 24.48	. .	14 8 43.31	+ 19 58 55.04	6.03	56.57	9.0	8.8	8.2	9.1	8.78
24	26.91	.76	.03	11.26	348 49 52.75	. .	14 38 20.33	+ 27 43 23.31	5.62	50.08	8.88	8.32	8.36	9.22	8.70
25	26.92	2.63	.00	1 2.92	312 17 35.30	. .	15 8 49.77	— 8 48 54.14	6.76	37.75					
26	26.93	0.76	.00	0 11.79	348 20 34.08	. .	15 28 15.27	+ 27 14 4.64	5.15	42.30					
27	26.93	.74	.01	36.27	328 1 12.86	. .	15 36 46.73	+ 6 54 43.41	+ 6.12	36.82	June 17,		6h.	(M.)	180 0
28	26.94	2.86	. .	. .	. . . .	. .	15 49 41.43	. . . .	— 10.04		8.8	9.2	8.9	9.5	9.10
29	26.94	0.74	.00	1 32.26	301 43 35.36	. .	15 56 36.21	— 19 22 54.08	+ 7.14	29.80	8.8	9.4	8.8	8.9	8.98
30	26.94	.76	.00	0 51.85	317 48 45.75	. .	16 6 23.06	— 3 17 43.69	6.44	30.83	8.8	8.5	8.5	9.2	8.76
31	28.02	.75	+14 28.18	12.97	344 45 42.57	9.01	5 41 46.65	+ 23 23 23.01			9.0	8.8	9.1	9.4	9.08
32			—17 10.92	13.45	344 14 2.98						9.1	9.1	9.0	9.5	9.18
33	28.14	— .74	— 0 0.20	— 24.22	336 32 1.20	9.34	11 41 16.58	+ 15 25 31.11	7.72	—53.38	8.90	9.00	8.86	9.30	9.02
34	28.16	+ 10.99	. .	. .	. . . .	. .	12 26 23.63	. . . .	7.16						
35	. .	. .	+ 22.97	+ 1 13.12	52 37 5.16	. .									
36	. .	. .	10.33	1 13.21	3.59	. .					June 17,		11h.	(M.)	180 0
37	. .	. .	2.60	1 13.27	3.65	. .					10.0	9.3	9.8	9.9	9.75
38	28.17	22.02	0.05	1 13.33	2.60	. .	13 4 27.04	+ 88 29 26.36	37.14	+69.18	9.8	8.9	9.9	9.4	9.50
39	. .	. .	2.22	1 13.36	4.21	. .					9.4	8.8	8.7	9.8	9.18
40	. .	. .	9.33	1 13.41	3.06	. .					9.4	8.6	8.7	9.2	8.98
41	. .	. .	21.66	+ 1 13.44	3.83	. .					9.5	8.7	8.8	9.3	9.07
42	28.19	— 0.74	+ 0.11	— 0 20.25	340 16 30.43	. .	13 47 26.10	+ 19 10 0.34	6.48	—54.32	9.62	8.86	9.16	9.52	9.30
43	. .	. .	— 0.09	— 0 19.42	341 5 24.71	. .	. . . .	+ 19 58 54.62	. .	56.85					
44	28.20	.76	. .	. .	. . . .	. .	14 38 20.56	. . . .	5.53						
45	28.20	4.60	. .	. .	. . . .	. .	14 42 27.88	. . . .	6.99		June 21,			(M.)	180 0
46	28.31	0.75	. .	. .	. . . .	. .	5 58 24.87				9.8	9.9	9.8	9.0	9.63
47											8.8	8.9	8.9	8.5	8.78
48	28.32	— .75	. .	. .	. . . .	. .	7 31 17.83	. . . .	8.96		9.8	9.5	9.4	9.2	9.48
49	28.32	+ 3.40	. .	. .	. . . .	. .	7 35 57.21	. . . .	10.54		9.7	9.2	9.8	9.4	9.53
50	28.58	— 6.75	. .	. .	. . . .	. .					9.6	9.2	9.0	9.0	9.29
51	— 29.58	0.75	. .	. .	. . . .	. .	6 6 43.98	. . . .			9.54	9.34	9.38	9.02	9.33
52	. .	— 11.74	. .	. .	. . . .	. .	. . . .	. . . .	+ 8.95						
											June 21,			(M.)	179 59
											33.4	33.8	31.4	35.9	33.63
											32.9	32.8	32.2	34.7	33.15
											32.4	32.1	31.7	34.0	32.55
											31.9	31.5	32.1	33.9	32.35
											31.3	32.0	31.7	34.5	32.38
											32.31	32.44	31.82	34.60	32.82
											June 24,			(M.)	180 0
											10.1	9.7	8.8	9.8	9.60
											9.1	9.2	8.4	9.1	8.98
											7.5	9.0	8.3	9.4	8.55
											8.93	9.30	8.50	9.43	95.0

No.	Object.	COR. IN Æ. Semi-Diam.	Observed Semi-diam. Hor.	Vert.
		M. s.	M. s.	′ ″
31	Sun . .	. . . .	1 8.89	15 51.72
46	Sun . .	. . . .	1 9.07	
50	Sun . .	. . . .	1 8.88	

11, 34. Very faint. 11. Clouded.
45. Poor observation.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
June 24	1	δ Leonis	53.0	5.0	16.9	28.0	40.0	52.2	3.1	11 6 28.32	342 28 21.4	21.4	23.8	25.5	23.02	. .	30.200	76.1	80.0	M
	2	β Leonis	12.0	23.5	34.4	46.2	57.2	8.9	20.2	11 41 46.06	336 32 24.1	25.4	26.7	27.5	25.92	. .	30.198	76.8	80.0	
	3	α Bootis	37.4	49.4	0.9	12.5	24.0	35.9	47.4	14 9 12.50	341 5 41.7	42.9	45.5	46.2	44.07	. .	30.198	76.5	74.2	
26	4								45.5											
	5							42.5												
	6						43.0													
	7	Polaris, S. P.				35.5				13 4 35.86										
	8				32.0															
	9			24.0																
	10		28.5																	
	11	β Libræ	45.0	56.5	7.4	18.2	28.9	40.3	51.4	15 9 18.25	312 18 32.9	36.2	41.2	42.2	37.87	. .	30.114	79.0	74.7	
	12	α Coronæ Bor.	7.2	19.4	32.0	44.0	56.4	9.0	20.7	15 28 44.10	348 20 49.0	47.9	54.8	55.4	51.77	. .	30.118	79.5	73.9	
	13	α Serpentis	42.8	53.7	4.9	15.6	26.7	37.9	49.0	15 37 15.80	328 1 48.8	52.6	56.9	56.5	53.70	. .	30.118	78.4	73.5	
	14	ζ Ursæ Minoris	..	..	19.0	12.4	6.3	0.0	54.2	15 51 6.38										
	15	β^1 Scorpii	29.9	41.8	52.0	5.0	16.0	28.2	39.4	15 57 4.61										
	16	δ Ophiuchi	..	30.0	40.8	51.7	2.4	13.9	24.7	16 6 57.25	317 49 31.5	35.2	39.0	40.7	36.60	. .	30.116	78.0	72.8	
	17	α Scorpii	57.4	10.2	22.4	34.5	46.3	59.0	11.1	16 20 34.42										
July 1	†18	α Scorpii	0.1	11.9	24.5	37.2	48.7	1.1	14.2	16 20 36.81										
	19	α Herculis	41.2	52.4	3.8	15.2	26.3	37.5	49.3	17 8 15.10										
	20	α Ophiuchi	50.4	2.2	13.5	25.1	36.2	47.2	58.3	17 28 24.70										
	21	Sun, 2d L.	8.5	20.4	32.7	45.0	56.1	8.8	20.0	6 44 44.50										
	†22	β Draconis	..	59.4	16.8	35.2	53.2	11.3	29.1	17 27 44.23	13 31 26.6	19.9	24.1	27.6	24.55	. .	30.174	75.0	66.4	
	23	α Lyræ	39.7	54.0	7.8	22.0	35.8	50.1	4.2	18 32 21.94	359 45 23.0	21.3	21.3	26.2	22.95	. .	30.160	73.2	65.4	
	24	β Lyræ	23.4	36.7	49.0	3.2	15.6	28.0	51.7	18 45 2.51	354 18 3.5	3.0	6.8	6.9	5.05	. .	30.160	73.0	64.9	
	25	ζ Aquilæ	25.2	36.9	48.1	59.2	10.3	21.2	33.0	18 58 59.13	334 45 31.0	33.5	34.4	38.1	38.25	. .	30.162	72.8	64.8	
	26	δ Aquilæ	50.7	2.0	12.9	23.2	34.3	45.1	56.0	19 18 23.46	323 56 12.1	16.1	18.3	18.9	16.35	. .	30.160	72.0	63.8	
	27	γ Aquilæ (Mic.)	1.8	13.4	24.5	35.2	46.2	57.9	9.1	19 39 35.45	331 13 39.8	43.0	45.5	46.2	43.64	44.117	30.160	72.0	63.7	
	†28	α Aquilæ	22.1	33.8	44.9	56.0	6.8	18.0	28.6	19 43 55.75	329 35 19.0	26.5	22.4	27.5	23.85	. .	30.158	71.8	63.8	
	29	α^2 Capricorni	36.0	47.8	59.1	10.0	21.4	32.9	44.2	20 10 10.20	308 7 3.1	3.3	9.6	8.1	6.02	. .	30.150	70.5	62.8	
4	30	β Ursæ Minoris	43.0	26.0	7.5	49.5	30.7	12.5	54.2	14 51 49.06	35 52 56.6	46.5	51.3	53.4	52.45	. .	30.108	75.8	72.5	
	†31	β Libræ	49.9	0.8	12.2	22.9	34.5	46.0	56.8	15 9 23.30	312 18 30.0	27.5	37.8	38.2	33.38	. .	30.110	75.8	72.4	
	32	α Coronæ Bor.	11.4	24.1	36.6	49.2	1.3	13.7	26.0	15 28 48.90	348 20 47.0	45.7	50.2	51.5	48.60	. .	30.114	75.4	72.5	
	33	α Serpentis	47.2	59.0	9.9	20.7	31.3	42.8	53.8	15 37 20.67	328 1 44.1	46.0	52.0	51.8	48.47	. .	30.116	75.2	72.0	
	34	β^1 Scorpii	..	47.0	58.4	10.0	21.4	33.2	45.0	15 57 15.83	301 44 59.0	60.7	66.8	58.2	61.17	. .	30.116	75.0	71.0	
	35	δ Ophiuchi	23.7	35.0	46.9	..	7.8	18.4	29.8	16 6 56.93	317 49 32.7	35.2	39.8	40.8	37.13	. .	30.120	74.8	70.7	
	†36	α Scorpii	2.8	15.2	27.0	39.4	51.5	4.0	16.0	16 20 39.42										
	37	γ Aquilæ	2.5	14.4	24.7	34.5	..	58.4	10.0	19 39 34.08										
	38	β Aquilæ	51.8	3.0	14.2	15.4	35.3	47.4	57.5	19 48 24.94	327 9 0.0	2.0	7.1	6.7	3.95	. .	30.110	71.0	63.0	
	†39	α^2 Capricorni	37.0	47.8	59.4	10.2	22.0	33.4	44.2	20 10 10.57	308 7 6.4	7.9	14.3	13.7	10.58	. .	30.102	70.8	62.0	
	40	ζ Cygni	24.2	37.8	50.0	3.0	14.6	28.2	40.9	21 7 2.81	350 42 55.2	58.0	59.2	62.1	58.62	. .	30.102	69.5	61.0	
	41	α Aquarii	59.2	10.3	21.2	32.4	42.6	54.3	..	21 58 26.67	320 3 53.5	58.8	62.8	62.2	59.32	. .	30.100	68.2	61.0	
7	42	β Draconis	43.5	2.0	19.2	38.5	56.2	13.5	32.0	17 27 37.84										M
	†43	α Lyræ	42.5	57.2	11.0	25.5	39.2	53.0	7.2	18 32 25.09										
	44	β Lyræ	25.8	39.2	52.2	5.0	..	..	..	18 44 45.55										
13	†45	α Aurigæ	10.7	26 2	41.9	57.4	13.5	29.4	44.7	5 5 57.69	6 56 16.4	11.7	15.8	19.1	15.75	. .	29.994	80.4	82.9	M
	46	α Bootis	40.2	51.9	3.7	15.4	26.8	38.5	50.4	14 9 15.27	341 5 40.1	43.4	45.4	44.6	43.37	. .	29.900	85.0	85.2	
14	47	ε Bootis	15.7	28.3	40.2	53.0	5.1	17.8	29.9	14 38 52.86	348 50 4.2	6.0	12.7	8.9	7.95	. .	29.892	84.4	83.8	
	48	α Herculis	..	..	5.5	17.2	28.0	40.2	51.5	17 8 28.48										M
	49	α Lyræ	40.5	54.8	8.2	22.5	36.2	50.2	4.2	18 32 22.37	359 45 25.2	20.5	25.1	28.5	24.82	. .	30.008	75.4	70.8	
	50	ζ Aquilæ	26.2	37.2	48.0	59.5	11.0	22.5	33.8	18 58 59.74	334 45 38.9	44.6	44.9	48.6	44.25	. .	30.008	75.2	71.3	
	†51	δ Aquilæ	51.5	2.2	13.0	24.0	35.5	46.5	..	19 18 18.78							30.025	75.0	70.0	
	52	γ Aquilæ	2.8	14.2	25.0	36.5	..	58.8	9.2	19 39 34.42										

DATE.	CLOCK. +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	
	h.	s.	s.	s.	″	h.	rev.
June 24, 12	f 28.71	l 0.005	+ 0.173	— 0.752	— 0.87		
26, 16	28.05	g .010			+ 0.39		
July 1, 17	31.12	.026					
2,		.024					
3, 19	32.75	.020			— 0.19		
4, 19	33.16	.015			0.03		
7, 18	35.58	g .008					
13, 14	31.80	l .004			0.43		
14, 20	33.25	g 0.008			— 0.32		

1 rev. = 34″.406

28 Wire IV recorded 55s.0
36. Wire VI recorded 3s.0
39. Wire VII recorded 45s.2
43. Wire IV, V, VII, VIII recorded 1s. less.
45. Wire II recorded 27s.2

June 24, July 3, July 14. Used mic. 4 at 39r.90 instead of fixed wire
26. " " " 39.75 " " "

Assumed Latitude 38° 53′ 39″.25 North.

No. for ref.	COR. IN R. Clock.	COR. IN R. Inst.	COR. IN DEC. Inst.	COR. IN DEC. Object.	Corrected Reading.	Zenith Point.	OBSERVED R. A.	OBSERVED DEC.	REDUCTION TO 1850.0. R. A.	REDUCTION TO 1850.0. DEC.	NADIR POINT. A.	B.	C.	D.	Mean.
	s.	M. s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″	June	26,		(M.)	° ′
1	28.72	— 0 0.74	— 0 0.63	— 0 17.47	342 28 5.52	9.08	11 5 58.86	+ 21 21 35.69	+ 8.44	—52.98					180 0
2	28.71	.74	.16	24.00	336 32 1.76	. .	11 41 16.61	+ 15 25 31.92	7.80	53.80	7″9	6″9	7″9	7″2	7″48
3	28.71	.74	.07	19.14	341 5 25.86	. .	14 8 43.05	+ 19 58 55.03	6.11	57.74	7.8	8.0	8.1	7.2	7.78
4						. .					7.8	8.2	8.5	8.1	8.15
5						. .					7.5	7.9	8.0	8.5	7.98
6						. .					7.6	7.9	8.1	8.2	7.95
7	28.02	+ 22.02	. .	. . .	. . . .	7.8.	13 4 29.86	. . . .	29.66		7.72	7.78	8.12	7.84	7.87
8						. .									
9						. .									
10						. .									
11	28.04	— 0.78	— .05	1 1.06	312 17 36.75	. .	15 8 49.43	— 8 48 51.83	6.80	38.37					
12	28.05	.76	+ .02	0 11.50	348 20 40.29	. .	15 28 15.19	+ 27 14 11.70	5.22	44.45	July	3,		(M.)	180 0
13	28.05	.74	+ .05	34.82	328 1 18.83	. .	15 36 47.01	+ 6 54 59.24	+ 6.15	38.24					
14	28.05	56.71	. .	. . .	. . . .	. .	15 50 41.62	. . . .	— 9.36		7.9	8.2	8.2	8.4	8.18
15	28.05	0.86	. .	. . .	. . . .	. .	15 56 25.70	. . . .	+ 7.13		7.2	7.5	7.5	7.9	7.52
16	28.05	6.25	— .01	— 0 50.57	317 48 46.02	. .	16 6 22.95	— 3 17 42.57	6.40	31.83	7.0	7.7	8.3	8.4	7.85
17	28.06	0.93	. .	. .	. . . .	. .	16 20 5.43	. . . .	7.43		7.0	7.5	8.1	7.5	7.53
18	31.10	.93	. .	. .	. . . .	. .	16 29 4.78	. . . .	7.43		6.5	7.0	7.4	8.0	7.22
19	31.12	.73	. .	. .	. . . .	. .	17 7 43.15	. . . .	5.31		7.12	7.58	7.90	8.04	7.67
20	31.13	.73	. .	. .	. . . .	. .	17 27 52.54	. . . .	5.38						
21	31.52	.75	. .	. .	. . . .	. .	6 43 3.55								
22	32.72	10.00	— .01	+ 13.63	13 31 24.54	7.67	17 27 1.51	+ 52 25 9.75	1.25	22.52					
23	32.74	0.83	+ .02	— 0.25	359 45 22.72	. .	18 31 48.27	+ 38 38 54.30	3.07	3.89	July	4,		(M.)	180 0
24	32.74	.79	.01	5.67	354 17 59.39	. .	18 44 28.98	+ 33 11 30.97	3.61	— 1.38					
25	32.75	.73	+ .04	26.79	334 45 11.50	. .	18 58 25.65	+ 13 38 43.08	5.18	+ 1.57	10.2	10.3	11.4	11.5	10.85
26	31.75	.74	— .05	41.45	323 55 34.85	. .	19 17 49.97	+ 2 49 6.43	5.91	5.89	11.0	10.8	11.5	10.9	11.05
27	32.76	.73	8 11.65	31.10	331 21 25.09	. .	19 39 1.96	+ 10 14 55.75	5.47	10.85	9.8	10.5	11.0	10.8	10.52
28	32.76	.73	0 0.04	33.41	329 34 50.40	. .	19 43 22.25	+ 8 28 21.98	5.67	12.57	9.4	10.8	11.0	11.0	10.55
29	33.77	.81	— .02	— 1 12.56	308 5 53.44	. .	24 9 36.62	— 13 0 34.98	+ 6.79	+14.52	9.3	10.7	10.3	9.9	10.05
30	33.10	2.22	.00	+ 0 40.41	35 53 32.86	10.60	14 51 13.73	+ 74 47 1.51	— 1.65	—59.08	9.94	10.62	11.04	10.82	10.68
31	33.10	0.78	+ .01	— 1 1.34	312 17 32.05	. .	15 8 49.42	— 8 48 59.30	+ 6.85	38.83					
32	33.11	.76	.00	0 11.53	348 20 37.07	. .	15 28 15.03	+ 27 14 5.72	5.29	45.83					
33	33.11	.74	.00	34.92	328 1 13.55	. .	15 36 46.82	+ 6 54 42.20	6.19	39.20					
34	33.11	6.68	.00	1 30.36	301 43 30.81	. .	15 56 36.04	— 19 23 0.51	7.16	29.99	July	13,		(M.)	180 0
35	33.12	0.75	.00	0 50.79	317 48 46.34	. .	16 6 23.06	— 3 17 45.09	6.46	—32.52					
36	33.12	— .93	. .	. . .	. . . .	. .	16 20 5.37	. . . .	7.44		7.4	7.3	8.2	8.3	7.80
37	33.17	+ 1.13	. .	. . .	. . . .	. .	19 39 2.04	. . . .	5.46		7.2	8.0	8.6	8.7	8.13
38	33.17	— 0.74	.00	36.75	327 8 27.20	. .	19 47 51.03	+ 6 1 55.85	5.73	+10.97	7.3	8.0	8.4	8.4	8.04
39	33.18	.81	— .03	1 12.56	308 5 58.05	. .	20 9 36.58	— 13 0 33.30	6.77	14.43	7.0	7.4	8.5	8.3	7.80
40	33.19	— .77	+ .01	0 9.34	350 42 49.29	. .	21 6 28.85	+ 29 36 17.94	4.57	32.50	7.2	7.6	8.2	8.0	7.75
41	35.20	+ 4.73	+ .01	47.81	320 3 11.52	. .	21 57 58.20	— 1 3 19.83	6.49	+34.56	7.22	7.66	8.38	8.34	7.90
42	35.57	— 1.02	. .	. . .	. . . .	. .	17 17 1.25	. . . .	1.29						
43	35.58	— 0.83	. .	. . .	. . . .	. .	18 31 48.68	. . . .	3.06						
44	35.58	+ 18.84	. .	. . .	. . . .	. .	18 44 28.81	. . . .	3.59						
45	31.83	— 0.91	— .03	6.64	6 56 22.38	7.92	5 5 24.95	+ 45 49 53.71	11.92	+25.23					
46	31.79	.74	.04	18.56	341 5 24.77	. .	14 8 42.74	+ 19 58 56.10	6.34	—59.59	July	14,		(Mu.)	180 0
47	31.79	.76	.12	10.72	348 49 57.11	. .	14 38 20.31	+ 27 43 28.44	5.94	54.05	7.2	6.1	8.1	10.6	8.00
48	33.23	— 12.04	. .	. . .	. . . .	. .	17 7 43.21	. . . .	5.34		8.1	8.0	8.6	10.5	8.80
49	33.24	0.83	.00	0.25	359 45 24.64	8.84	18 31 48.30	+ 38 38 57.05	3.05	7.14	9.0	8.9	8.8	10.9	9.40
50	33.24	— .73	— .00	0 26.32	334 45 18.06	. .	18 58 25.77	+ 13 38 48.47	5.10	— 0.71	8.5	7.5	8.0	10.0	8.50
51	33.24	+ 4.75	. .	. . .	. . . .	. .	19 17 50.29	. . . .	5.80		8.5	8.6	10.0	11.0	9.53
52	33.25	+ 1.13	. .	. . .	. . . .	. .	19 39 2.30	. . . .	+ 5.35		8.26	7.82	8.70	10.60	8.85

No.	Object.	COR. IN R. Semi-Diam.	Observed Semi-diam. Hor.	Vert.
		M. s.	M. s.	
21	Sun . .	— 1 8.68		

18, 31. Poor observation.
22. Unsteady.
51. Cloudy.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
July 14	1	ζ Cygni	25.2	37.5	50.2	3.0	15.2	27.8	40.8	21 6 2.81	. . .	. .	. .	. .	. .	. .				Mu.
	2	β Aquarii	33.8	45.0	55.8	6.0	..	29.0	40.0	21 24 4.93	314 53 17.3	19.9	24.0	26.8	21.87	. .	30.004	74.0	69.2	
16	†3	ζ Ursæ Minoris	34.5	30.5	21.5	16.5	10.5	4.0	58.0	15 50 16.50	. . .	. .	. .	. .	. .	. .	30.220	78.0	75.8	
	4	α Scorpii	3.8	15.8	25.2	40.2	51.8	..	16.8	16 20 36.10	. . .	. .	. .	. .	. .	. .	30.202	77.5	74.9	
	5	β Lyræ	23.8	37.2	50.2	3.0	16.2	30.4	43.4	18 45 3.46	. . .	. .	. .	. .	. .	. .	30.204	75.0	70.4	
	6	δ Aquilæ	52.2	3.2	14.0	25.0	36.8	47.2	58.0	19 18 25.20	. . .	. .	. .	. .	. .	. .	30.208	74.2	70.2	
	†7	γ Aquilæ	3.8	14.8	26.0	37.0	48.0	59.0	10.0	19 39 36.94	. . .	. .	. .	. .	. .	. .	30.210	74.4	69.5	
18	8	δ Ophiuchi	24.5	35.0	45.7	56.6	7.0	19.2	30.0	16 6 56.86	317 50 12.8	12.8	14.5	8.2	12.07	. .	30.232	82.0	81.0	M.
	9	η Draconis	..	..	10.2	33.7	56.5	19.7	43.0	16 22 56.62	22 58 48.7	38.7	41.6	37.0	41.50*d*	. .	30.232	81.7	80.7	
	10	β Ceti	57.2	8.3	20.0	31.4	43.3	55.2	6.2	0 36 31.66	. . .	. .	. .	. .	. .	. .				
	11	Polaris	46.0								49 35 55.8	42.4	58.5	44.0	47.67	. .	30.232	77.0	74.5	
	12			51.0							45.8	31.4	38.6	35.2	37.75	. .				
	13				43.0						37.5	24.2	30.6	26.9	29.80	. .				
	14					41.5				1 5 39.36	36.3	23.4	29.0	25.3	28.50	. .	30.234	76.8	74.1	
	15						37.0				32.2	23.4	29.8	28.1	28.37	. .				
	16							31.0			46.5	32.9	39.5	35.9	38.70	. .				
	17								26.0		56.4	43.4	50.0	45.4	48.80	. .	30.236	76.5	74.2	
	18	α Arietis	35.4	47.2	59.2	11.3	23.2	35.0	46.4	1 59 11.10	. . .	. .	. .	. .	. .	. .				
23	19	γ Draconis	52.8	11.2	38.2	46.0	3.0	20.8	37.8	17 53 45.69	. . .	. .	. .	. .	. .	. .				Mu.
	20	β Lyræ	27.8	41.2	54.2	7.5	21.0	33.5	46.5	18 45 7.39	. . .	. .	. .	. .	. .	. .				
	21	δ Aquilæ	55.5	5.8	16.8	27.8	39.2	50.0	..	19 18 22.52	. . .	. .	. .	. .	. .	. .				
	†22	γ Aquilæ	6.5	18.0	28.8	39.8	50.8	2.0	12.8	19 39 39.82	. . .	. .	. .	. .	. .	. .				
	23	α¹ Capricorni	16.8	28.0	39.0	50.8	1.0	12.8	24.8	20 9 50.46	. . .	. .	. .	. .	. .	. .				
27	24	δ Ursæ Minoris	17.0	24.0	28.0	34.0	35.0	40.0	45.0	18 22 31.86	. . .	. .	. .	. .	. .	. .				M.
	25	β Lyræ	28.7	42.2	55.4	8.3	21.3	34.0	47.2	18 45 8.16	354 18 4.5	5.2	8.2	6.7	6.15	. .	30.098	68.2	57.9	
	26	ζ Aquilæ	31.0	43.2	54.4	5.0	16.5	17.9	39.4	18 59 5.35	334 45 30.5	34.5	34.2	35.6	33.70	. .	30.098	68.0	58.5	
	27	δ Aquilæ	56.4	8.4	..	..	41.0	52.4	3.2	19 18 32.28	323 56 10.6	15.0	16.1	16.9	14.65	. .	30.098	67.5	58.0	
	†28	γ Aquilæ	8.5	19.7	30.8	42.0	53.2	4.4	15.2	19 39 41 97	331 21 51.5	55.8	55.8	57.5	55.15	. .	30.098	67.2	57.5	
	29	β Aquilæ	..	..	19.5	30.4	41.8	52.8	3.5	19 48 41 60	327 8 58.5	63.8	65.8	65.0	63.27	. .	30.100	67.5	57.5	
	30	α² Capricorni	42.5	54.0	5.2	17.0	27.3	39.4	50.5	20 10 16 56	308 6 58.4	62.0	68.0	67.2	63.90	. .	30.092	66.5	56.9	
	31	α Cygni	10.0	25.2	40.7	56.0	11.5	..	42.5	20 36 50.98	. . .	. .	. .	. .	. .	. .				
	32	61¹ Cygni	4.6	18.3	32.0	46.2	0.3	13.5	27.9	21 0 46.11	. . .	. .	. .	. .	. .	. .	30.088	65.0	55.7	
	33	α Cephei	30.0	54.0	17.0	40.0	3.0	26.3	50.0	21 15 40.19	23 2 33.4	23.2	29.4	33.2	29.80	. .	30.088	64.7	55.6	
	34	ε Pegasi	50.0	1.4	12.3	23.1	34.5	45.0	56.5	21 37 23.26	330 17 43.0	50.4	51.4	58.2	50.75	. .	20.088	64.4	55.5	
	35	Neptune	58.0	9.4	20.4	30.4	42.0	54.1	..	22 8 25.72	. . .	. .	. .	. .	. .	. .				
29	36	β Lyræ	..	..	..	..	..	..	..	. . .	354 18 5.2	7.1	8.4	9.0	7.42	. .	30.050	69.5	64.7	
	37	ζ Aquilæ	33.2	45.1	55.8	7.3	18.4	30.0	40.9	18 59 7.25	334 45 28.8	31.0	32.2	34.2	31.55	. .	30.046	69.5	63.4	
	38	δ Aquilæ	58.9	10.0	20.4	31.7	42.6	53.0	4.3	19 18 31.56	323 56 7.4	13.0	14.3	14.5	12.30	. .	30.038	68.5	63.0	
	39	γ Aquilæ (Mic.)	10.4	21.4	32.5	44.0	54.9	6.3	17.1	19 39 43 80	331 21 37.7	41.3	42.3	43.1	41.10	40.405	30.040	68.0	62.6	
	40	α Aquilæ	30.4	41.7	52.6	4.0	14.8	26.0	36.9	19 44 3.77	329 35 18.5	24.0	25.0	26.3	23.45	. .	30.038	68.0	62.3	
	†41	β Aquarii	41.9	53.0	3.8	14.6	24.7	37.0	47.4	21 24 14.63	314 53 11.3	16.9	18.2	18.4	16.20	. .	30.024	65.9	59.8	
	42	ε Pegasi	51.9	3.4	14.6	25.1	36.2	47.3	58.5	21 37 25.27	330 17 47.4	52.3	53.0	54.5	51.80	. .	30.022	66.8	59.4	
	†43	α Gruis	30.1	46.2	2.2	19.0	35.2	51.0	8.1	21 59 18.83	273 37 5.7	3.0	7.6	5.7	5.25	. .	30.020	66.5	58.5	
	†44	Moon, 2d&N.L. (Mic.)	45.4	57.3	8.2	20.0	30.9	42.0	53.2	22 40 19 57	314 48 32.4	36.9	41.4	40.2	37.73	41.942	30.014	66.1	59.0	
Aug. 2	†45	μ¹ Sagittari	47.4	59.2	10.4	22.2	34.0	46.3	7.1	18 5 22.37	300 2 27.5	31.5	36.1	36.6	32.95	. .	30.144	74.8	68.9	
	†46	α Lyræ	49.0	3.0	16.5	31.0	44.7	59.0	12.7	18 32 30.84	359 45 23.2	25.4	26.2	25.2	25.00	. .	30.142	74.2	67.8	
	47	β Lyræ	32.0	45.2	58.0	11.3	24.0	37.4	50.2	18 45 11.16	354 18 2.8	5.0	6.3	6.8	5.22	. .	30.142	73.5	67.5	
	48	α Cassiopeiæ	40.2	0.0	19.2	39.5	58.4	17.4	37.2	0 32 38.84	. . .	. .	. .	. .	. .	. .				
5	†49	ε Bootis	26.5	38.3	51.3	3.5	16.0	28.4	40.0	14 39 3.43	348 50 1.1	4.1	4.7	6.2	4.04	. .	29.766	77.2	77.5	
	50	β Libræ	59.4	10.7	21.9	33.0	43.8	55.4	6.0	15 9 32.89	312 18 25.9	31.0	31.7	32.2	30.20	. .	29.764	77.0	75.9	
	51	α Serpentis	57.0	8.0	18.5	29.9	40.8	52.0	3.4	15 37 29.94	328 1 38.0	44.5	47.9	47.3	44.42	. .	29.754	76.0	74.0	
	52	μ¹ Sagittarii	48.8	0.2	12.4	24.2	35.2	47.6	59.0	18 5 23.92	300 2 38.7	31.9	36.1	36.7	33.35	. .	29.748	73.0	68.2	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF η.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.
h.	s.	s.	s.	s.	″	h.	revs.
July 16, 19	*f* 33.92	*g* 0.020	+0.173	—0.752			
18, 1	34.81	.021	— .142	—0.437	+0.09	17	40.110
23, 19	37.84	.020					
27, 20	39.03	.034			+ .60		.080
29, 20	40.94	.020			— .06		.080
Aug. 2, 18	41.71	.006			+ .51		
5, 18	43.31	.015			+0.07		

1 rev. = 34″.406

3 to 7. Date obtained from Meterological Journal.
22. Wires I, VI, recorded 7*s*.5, 1*s*.0
28. Wire V, recorded 52*s*.2
45. Wire I, recorded 48*s*.4
46. Wire I, recorded 48*s*.0

July 17. Mic. screw taken out and cleaned. Diaphragm also taken out. Fixed horizontal wire which had been slackened, removed, and a new one inserted in its place.

Assumed Latitude 38° 53′ 39″.25 North.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Aug. 5	1	α Lyræ	50.0	4.5	18.0	32.2	46.4	0.5	14.3	18 32 32.27	359 45 22.2	23.9	24.9	25.0	24.00	. .	29.744	72.0	66.5	M.
	†2	ζ Aquilæ	36.4	47.1	58.2	10.0	21.0	31.9	43.2	18 59 9.69	334 45 31.1	36.7	36.0	37.8	35.37	. .	29.743	71.3	65.2	
	3	λ Ursæ Minoris			19.0						49 56 51.3	44.8	50.2	51.2	49.37	. .	29.736	69.9	62.8	
	4					29.0						43.9	33.8	40.5	44.0	40.55	. .				
	5						40.0			20.21 16.60		41.4	31.8	38.5	40.9	38.15	. .	29.734	69.5	63.2	
	6							56.0				54.0	44.5	51.7	53.4	50.90	. .				
	7								59.0											
	8	61¹ Cygni	9.0	22.5	36.9	49.5	4.5	17.8	31.9	21 0 50.30	359 6 40.2	46.1	46.8	49.1	45.55	. .	29.724	68.2	63.9	
	9	β Aquarii	44.3	55.4	6.5	17.0	27.9	39.5	50.4	21 24 17.29	314 53 8.1	12.0	15.5	15.8	12.85d	. .	29.714	68.2	62.8	
	10	ε Pegasi	54.3	5.7	16.6	27.4	39.0	50.0	1.1	21 37 27.73	330 17 44.7	48.5	50.2	51.2	48.65	. .	29.712	67.5	61.6	
	11	α Aquarii	9.4	21.0	32.1	43.0	53.5	4.8	15.6	21 58 42.77	320 3 47.1	55.0	57.4	56.9	54.10	. .	29.700	67.0	60.7	
	12	Weisse XXII, 175	..	0.0	11.4	22.4	33.4	44.6	56.0	22 9 27.97	308 43 19.8	25.2	29.0	30.0	26.00	. .				
10	13	α Scorpii	11.3	23.5	36.0	47.8	0.0	12.7	24.8	16 20 48.01	295 3 0.7	3.2	9.4	7.5	5.20	. .	30.244	78.2	79.0	
	†14	μ^1 Sagittarii	48.5	0.0	11.9	23.5	34.9	46.6	58.4	18 5 23.42	300 2 25.2	29.2	33.5	34.9	30.80	. .	30.268	78.5	77.0	
	15	δ Ursæ Minoris			29.0					18 22 35.00	47 41 33.6	34.5	30.7	33.1	32.97	. .	30.268	78.5	76.9	
	16						41.0					"	"	"	"	"	. .				
	17	α Lyræ	49.2	3.2	17.6	31.5	45.4	59.5	13.3	18 32 31.37	359 45 25.2	26.1	26.5	26.6	26.10	. .	30.264	78.2	76.6	
	†18	β Lyræ	33.0	45.8	58.6	12.3	25.0	38.5	51.4	18 45 12.09	354 18 7.2	8.4	10.0	9.9	8.87	. .	30.260	78.2	76.3	
	19	ζ Aquilæ	34.4	46.4	57.5	8.6	20.3	31.4	42.8	18 59 8.77	334 45 30.0	35.6	35.2	36.0	34.20	. .	30.268	78.0	76.0	
	20	δ Aquilæ	0.6	11.5	22.4	33.3	44.3	55.4	6.0	19 18 33.36	323 56 8.1	13.2	15.4	15.2	12.97	. .	30.268	78.0	75.7	
	21	γ Aquilæ (Mic.)	12.2	23.3	34.2	45.5	56.7	8.0	19.0	19 39 45.56	331 20 15.5	19.0	20.5	19.0	18.50	42.864	30.278	77.5	75.5	
	22	α Aquilæ	31.5	43.4	54.0	5.6	16.0	27.4	38.4	19 44 5.19	. . .	.	.	.	.	. .				
	23	α^2 Capricorni	45.7	57.2	8.3	19.5	30.9	42.0	54.0	20 10 19.66	308 6 56.9	60.9	67.4	65.6	2.70d	. .	30.272	77.5	75.3	
11	24	δ Ophiuchi	32.0	53.4	54.0	5.0	16.2	27.3	38.1	16 7 5.14	317 49 28.1	31.8	34.5	35.4	32.45d	. .	30.188	80.0	79.5	
	25	α Scorpii	10.4	23.2	35.3	47.0	0.0	12.1	24.1	16 20 47.45	295 3 2.9	5.1	10.9	10.0	7.22	. .	30.188	80.0	79.0	
	26	Weisse XVI, 1033 (Mic. 5)	21.0	32.3	43.2	54.0	5.1	16.7	27.7	16 52 54.29	311 58 42.0	48.5	51.4	59.0	50.22	39.250	30.192	79.8	77.7	
	†27	Hebe, (Mic.)	..	..	..	..	..	..	44.0	16 56 44.00	" " "	"	"	"	"	42.140	"	"	"	
	28	Weisse XVII, 83	27.1	37.9	49.2	0.4	11.9	22.8	33.4	17 6 0.39	312 1 40.0	44.2	47.8	50.7	45.67	. .	30.190	79.8	77.5	
	29	δ Ursæ Minoris	22.0								47 41 36.9	30.7	38.8	37.2	35.90	. .	30.206	78.5	75.9	
	†30			30.0								33.2	27.0	30.4	33.8	31.10	. .				
	31				33.0							30.1	22.6	33.4	30.9	29.25	. .				
	32					37.5				18 22 37.50		29.6	20.9	35.0	30.0	28.87	. .	30.208	78.5	75.6	
	33						40.0					29.5	22.0	26.5	29.5	26.87	. .				
	34							48.0				34.0	27.2	30.0	34.3	31.37	. .				
	35								52.0			40.0	32.8	36.5	41.4	37.67	. .	30.210	78.5	75.8	
	36	γ Aquilæ	11.4	23.2	34.2	45.0	56.2	7.2	18.4	19 39 45.09	331 21 15.0	20.5	19.5	20.2	18.80	. .	30.206	78.3	74.0	
	37	α Aquilæ	..	..	..	5.4	16.0	27.3	38.4	19 44 21.77	329 35 19.4	22.9	24.2	25.1	22.90	. .	30.210	77.5	74.2	
12	38	α Cephei	34.5	57.2	..	44.3	7.4	30.4	53.6	21 15 47.90	23 2 35.2	29.0	33.0	35.6	33.20	. .	30.146	78.5	72.0	
	39	β Cephei	..	25.9	57.2	30.4	0.8	33.5	5.2	21 27 45.50	31 59 25.4	19.2	23.0	25.0	23.15	. .	30.138	78.2	71.5	
	40	ε Pegasi	53.0	4.8	..	26.7	37.6	48.2	59.6	21 37 28.32	330 17 37.9	45.4	46.4	47.5	44.30	. .	30.136	78.0	71.7	
	41	α Aquarii	8.4	20.8	30.2	40.9	52.4	3.8	14.5	21 58 41.60	320 3 42.2	51.0	54.4	54.0	50.40	. .	30.130	77.5	71.7	
	42	ζ Pegasi	3.0	14.4	25.3	36.2	47.1	58.6	9.8	22 34 36.34	331 9 12.0	15.1	16.9	17.2	15.30	. .	30.130	77.0	71.4	
	43	Saturn, 1st & N. L.	14.0	25.2	36.2	46.8	58.0	9.3	20.7	22 53 47.17	311 50 6.4	10.5	14.0	14.8	11.42	. .	30.126	77.0	70.2	
	†44	α Andromedæ	..	51.0	3.5	16.0	28.2	41.0	53.5	0 1 22.20	. . .	.	.	.	.	. .				
	†45	γ Pegasi	34.2	45.2	57.0	8.0	19.4	30.9	42.2	0 6 8.13	335 26 56.0	61.2	64.5	65.0	61.67	. .	30.130	76.8	70.6	
	46	α Cassiopeiæ (Mic. 7)	41.0	1.2	20.5	39.7	59.2	19.3	38.2	0 32 39.87	16 28 40.5	37.4	41.2	44.5	40.90	38.174	30.130	76.5	70.9	
	47	Polaris	15.5								49 35 7.2	3.8	5.1	8.5	6.15	. .	30.128	76.0	70.5	
	48			27.5							34 56.0	48.2	58.7	57.2	55.03	. .				
	49				14.5							45.8	38.8	45.8	49.0	44.85	. .				
	50					15.0				1 6 10.14		45.9	37.2	43.1	48.0	43.55	. .				
	51						2.0					48.5	40.0	47.4	51.1	46.75	. .				
	52							1.0				54.1	51.0	52.8	55.9	53.45	. .	30.128	75.9	70.5	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.
	h. s.	s.	s.	s.	″	h.	revs.
Aug. 10, 19	ƒ 42.61	10.004	—0.142	—0.437	+0.61	20	40.083
11, 20	42.17	.000			0.79	21	40.083
12, 0	42.57	g0.006			+0.26	0	40.082

1 rev. = 34″.406

2. Wire V recorded 20s.1
14. Wire III recorded 10s.9
18. Wire V recorded 26s.0
44. Transit recorded 1s .more.

Assumed Latitude 38° 53′ 39″.25 North.

No. for ref.	COR. IN R. Clock.	COR. IN R. Inst.	COR. IN DEC. Inst.	COR. IN DEC. Object.	Corrected Reading.	Zenith Point. 359°59′	OBSERVED R. A.	OBSERVED DEC.	REDUCTION TO 1850.0. R. A.	REDUCTION TO 1850.0. DEC.	NADIR POINT. A.	B.	C.	D	Mean
	s.	M s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″					° ′
1	— 43.32	— 0 0.68	— 0 0.01	— 0 0.24	359 45 23.75	62.12	18 31 48.27	+ 38 39 0.88	+ 3.20	—12.90		Aug 10		(M.)	179 59
2	43.33	.49	0.01	— 0 26.34	334 45 9.02	. .	18 58 25.87	+ 13 38 46.15	5.10	— 4.69	59″2	62″6	62″5	62″2	61″63
3	. .	. .	11.03	+ 1 6.81	49 57 45.15	. .					58.8	61.4	61.8	61.8	60.65
4	. .	. .	2.94	1 6.84	44.41	. .					60.7	62.5	63.0	62.9	62.27
5	43.35	4 9.59	0.01	1 6.75	44.89	. .	20 16 23.66	+ 88 51 21.87	203.78	+10.39	60.0	62.6	62.9	62.9	62.10
6	. .	. .	13.89	1 6.75	43.76	. .					60.5	62.6	63.4	61.9	62.10
7	. .	. .	30.39	+ 1 6.87	45.48	. .					59.84	62.34	62.72	62.34	61.81
8	43.36	0 0.67	— 0.01	— 0 0.88	359 6 44.66	. .	21 0 6.27	+ 38 0 21.17	4.20	30.61					
9	43.36	.43	+ .02	56.39	314 52 16.48	. .	21 23 33.50	— 6 14 6.39	6.06	24.31					
10	43.37	.47	+ .00	32.14	330 17 16.88	. .	21 36 43.89	— 9 10 53.64	5.43	27.48					
11	43.37	.44	— .02	47.22	320 3 6.86	. .	21 57 58.96	— 1 3 16.01	5.88	29.58					
12	43.38	6.04	+ .01	1 10.26	308 52 15.75	. .	22 8 38.55	— 12 24 7.12	6.25	+29.66					
13	42.62	0.42	— .02	1 58.02	295 1 7.16	61.81	16 20 4.97	— 26 5 15.40	7.79	—24.98					
14	42.61	.41	+ .10	— 1 35.98	300 0 55.62	. .	18 4 40.40	— 21 5 27.74	+ 7.33	8.80					
15	42.61	9.25	— .94	+ 1 1.13	47 42 33.16	. .	18 21 43.14	+ 86 36 10.53	— 61.91	17.64					
16			1.08	+ 1 1.13	33.02										
17	42.61	0.68	0.09	— 0 0.24	359 45 25.77	. .	18 31 48.08	+ 38 39 3.21	+ 3.27	14.02					
18	42.61	.62	.03	5.56	354 18 3.28	. .	18 44 28.86	+ 33 11 40.72	3.71	11.07					
19	42.61	.49	— 0.11	26.31	334 45 7.88	. .	18 58 25.67	+ 13 38 45.22	5.13	— 5.46					
20	42.61	.45	+ 0.15	40.26	323 55 32.48	. .	19 17 50.30	+ 2 49 9.92	5.76	+ 0.67					
21	42.61	.47	1 35.67	30.52	331 21 23.65	. .	19 39 2.48	+ 10 15 1·09	5.27	3.96					
22	42.61	.46	. .	. .	. . . .	. .	19 33 22.12	. . . .	5.44						
23	42.60	.42	+ 0 0.08	1 11.12	308 5 51.66	. .	20 9 36.64	— 13 0 30.90	6.42	+12.17					
24	42.17	.43	— .01	0 50.06	317 48 42.38	60.97	16 6 22.54	— 3 17 39.34	6.83	—35.09		Aug 11		(M.)	179 59
25	42.17	.42	— .03	1 57.78	295 1 9.41	. .	16 20 4.86	— 26 5 12.31	7.81	25.00	59.4	62.0	62.9	61.0	61.33
26	42.17	.42	+ 5 18.81	1 1.40	312 3 7.63	. .	16 54 11.70	— 9 3 14.09	6.87	24.99	58.4	61.8	61.9	61.4	60.87
27	42.17	33.28	+ 1 9.38	0 58.37	311 59 1.23	. .	16 55 28.55	— 9 7 20.49			59.4	62.0	61.9	61.7	61.25
28	42.17	0.42	— 0 1.20	— 1 1.51	312 0 42.96	. .	17 5 17.80	— 9 5 38.76	+ 6.83	23.90	58.1	62.1	61.5	61.0	60.68
29	. .	. .	9.50	+ 1 1.13	47 42 27.53	. .					59.4	61.3	61.5	60.7	60.72
30	. .	. .	4.00	1 1.13	28.23	. .					58.94	61.84	61.94	61.16	60.97
31	. .	. .	— 0.85	1 1.15	29.55	. .									
32	42.17	9.76	+ .13	1 1.16	30.16	. .	18 21 45.57	+ 86 36 6.71	— 61.59	—17.78					
33	. .	. .	— 1.07	1 1.15	26.95	. .									
34	. .	. .	4.55	1 1.14	27.96	. .									
35	. .	. .	— 10.21	+ 1 1.15	28.61	. .									
36	42.17	0.47	+ 33.09	— 0 30.52	331 21 21.37	. .	19 39 2.45	+ 10 14 59.65	+ 5.27	+ 3.82					
37	42.17	17.01	0.16	— 32.80	329 34 50.26	. .	19 43 22.53	+ 8 28 28.54	+ 5.44	5.79					
38	42.55	5.09	.03	+ 23.82	23 2 59.05	59.58	21 15 0.26	+ 61 56 36.72	— 0.31	26.09					
39	42.55	17.62	.05	+ 33.65	30 59 56.85	. .	21 26 45.33	+ 69 53 36.52	— 3.21	29.58					
40	42.55	2.32	.02	— 0 31.95	330 17 12.37	. .	21 36 43.45	+ 9 10 52.04	+ 5.37	26.27					
41	42.56	0.44	.07	46.85	320 3 3.48	. .	21 57 58.60	— 1 3 16.85	5.80	28.74					
42	42.56	.47	.02	30.86	331 8 44.42	. .	22 33 53.31	+ 10 2 24.09	5.52	34.59					
43	42.56	.42	.07	1 10.18	311 49 1.31	. .	22 53 4.82	— 9 17 19.04							
44	42.57	6.81	. .	. .	. . . .	. .	0 0 33.82	. . . .	5.65						
45	42.57	0.49	.00	— 0 25.64	335 26 36.03	. .	0 5 25.07	+ 14 20 15.70	5.93	43.42					
46	42.57	1.00	+19 16.56	+ 0 16.94	16 48 14.38	. .	0 31 56.30	+ 55 41 53.05	+ 5.33	55.55		Aug 12		(M.)	179 59
47	. .	. .	— 0 21.74	1 5.83	49 35 50.34	. .					57.5	60.4	60.0	59.4	59.33
48	. .	. .	9.17	1 5.82	51.68	. .					58.2	61.2	60.4	60.0	60.18
49	. .	. .	— 2.15	1 5.82	48.52	. .					57.5	60.4	60.0	61.0	59.72
50	— 42.58	— 22.06	+ 0.10	1 5.81	49.46	. .	1 5 5.50	+ 88 29 29.55	— 8.11	+63.14	57.4	60.0	59.6	60.4	59.35
51	. .	. .	— 2.54	1 5.85	50.06	. .					57.6	59.5	59.8	60.5	59.35
52	. .	. .	— 0 10.26	+ 1 5.91	49.10	. .					57.64	60.30	59.96	60.44	59.59

No.	Objects.	COR. IN R. Semi-diam.	Observed Semi-diam. Hor.	Vert.
		M. s.		
43	Saturn .	+ 0 0.63		

27. Observed for Dec. at M. s. 56 49.
30. " " " 18 0.
44, 45. Unsteady.

DATE. 1847.	No for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Aug.12	1	J Polaris							55.5		49 35 9.2	1.7	7.2	9.8	6.97	. .	30.126	75.5	69.4	M.
	†2	α Arietis	44.0	..	8.4	19.4	31.0	43.4	54.9	1 59 23.52	343 50 45.7	50.6	49.5	53.0	49.70	. .	30.122	74.5	68.5	
	3	Mars, 1st & N. L.	54.2	5.2	16.2	28.2	39.0	50.2	1.3	2 12 27.76	331 6 5.2	11.1	12.8	11.0	10.02	. .	30.126	73.8	68.2	
	4	Mars, S. L. (Mic.)	..	..	..	..	..	..	..	. . .	" " "	"	"	"	"	39.634				
	5	γ Ceti	35.2	46.0	57.2	8.1	19.2	30.1	41.3	2 36 8.16	323 42 20.0	26.1	28.5	28.5	25.77	. .	30.126	73.5	69.1	
	6	α Ceti	29.4	40.5	51.3	2.6	13.5	..	35.2	2 54 58.75	324 36 10.5	17.0	18.6	19.5	16.40	. .	30.132	73.0	69.0	
18	7	δ Aquilæ	5.2	16.4	27.0	38.2	49.1	0.0	11.2	19 18 38.16	323 56 4.3	9.8	19.8	11.7	11.40	. .	29.948	74.5	69.8	
	8	γ Aquilæ (Mic. 5)	17.0	28.3	39.5	50.6	1.0	12.4	24.0	19 39 50.40	331 18 5.5	9.5	20.0	11.0	11.50	36.590	29.944	74.5	69.0	
	9	α Aquilæ (Mic.)	..	..	..	10.5	21.0	32.5	43.0	19 44 26.75	329 32 50.2	56.9	58.2	58.0	55.82	44.352	29.944	74.2	68.9	
	10	β Aquilæ	5.4	17.4	28.2	39.0	50.1	1.2	11.9	19 48 39.03	327 8 54.2	59.2	72.2	62.1	61.92	. .	29.944	74.2	68.9	
	11	a^2 Capricorni	50.6	2.0	14.2	25.0	36.0	47.2	59.0	20 10 24.86	308 6 51.5	56.5	71.4	61.4	60.20	. .	29.936	74.0	68.0	
	12	61^1 Cygni (Mic.)	13.2	27.0	40.5	55.2	9.0	22.9	36.2	21 0 54.86	359 6 6.4	7.0	16.4	8.0	9.45	41.215	29.948	73.5	67.5	
	13	ζ Cygni	39.5	52.5	5.2	17.6	30.0	42.2	55.4	21 7 17.49	350 42 50.9	56.0	65.8	57.5	57.55	. .	29.950	73.2	66.7	
	14	α Cephei	39.2	3.0	26.0	49.0	12.2	35.6	59.0	21 15 49.13	23 2 37.4	30.5	45.9	37.2	37.75	. .	29.950	73.2	66.7	
	15	ε Pegasi	57.5	..	21.0	32.2	43.0	54.2	5.5	21 37 35.57	330 17 43.8	49.0	61.2	51.2	51.30	. .	29.942	72.5	65.9	
	16	Aquarii (7722) (Mic.)	44.2	55.3	6.4	18.1	29.0	40.0	51.3	22 3 17.76	308 49 27.4	30.8	45.4	35.9	34.88	39.180	29.946	72.3	65.2	
	17	Neptune (Mic.)	55.0	7.2	18.3	28.7	40.4	51.4	2.7	22 6 29.10	308 49 27.4	30.8	45.4	35.9	34.88	33.409	29.946	72.3	65.2	
	18	ζ Pegasi	8.2	19.5	30.4	42.0	52.4	4.0	15.0	22 34 41.64	331 9 13.2	16.4	27.0	19.5	19.02	. .	29.948	72.0	65.0	
	19	Saturn, 1st & N. L.	45.0	56.5	7.0	18.2	30.0	41.2	52.1	22 52 18.57	311 39 44.9	64.9	50.0	53.0	53.20	. .	29.946	71.7	64.8	
	20	Saturn, S. L. (Mic.)	..	..	..	..	..	..	..	. . .	" " "	"	"	"	"	39.562				
	†21	α Andromedæ	44.0	56.6	9.4	21.6	34.0	46.5	58.6	0 1 21.53	349 21 25.4	29.2	38.8	30.4	30.95	. .	29.956	71.8	63.8	
	†22	γ Pegasi	38.5	50.5	2.1	13.5	24.4	36.3	47.1	0 6 13.32	335 26 56.6	61.8	73.8	65.2	64.35	. .	29.958	71.8	62.9	
	†23	α Cassiopeiæ	46.2	6.2	26.0	45.2	5.3	24.0	43.9	0 32 45.33	16 47 60.0	55.9	69.8	61.2	61.72	. .	29.964	71.4	63.0	
	24		33.0								49 34 67.9	59.8	75.5	67.8	67.75	. .	29.964	71.0	62.5	
	25			39.0							56.2	47.2	65.0	56.2	56.15	. .				
	26				27.0						51.2	42.0	59.5	51.4	51.02	. .				
	†27	Polaris				25.0				1 6 26.20	48.2	40.2	57.5	49.3	48.72	. .	29.968	70.5	62.8	
	28						24.0				52.2	42.0	60.5	51.4	51.52	. .				
	29							19.0			59.4	49.2	68.0	60.2	59.20	. .				
	30								16.0		62.2	64.2	80.1	62.0	67.12	. .	29.970	70.5	62.5	
19	†31	Sun, 1st & N. L. (Mic. 6)	21.0	32.2	43.5	55.0	6.2	17.2	28.8	9 52 54.81	333 58 51.2	54.9	66.8	57.8	57.67	40.100	30.018	74.0	75.0	
	†32	Sun, 2d & S. L. (Mic. 2)	31.4	42.0	53.8	5.0	16.0	28.0	38.7	9 54 4.99	" " "	"	"	"	"	35.467	"	"	"	
	33		28.5								47 41 33.8	26.0	39.0	32.0	32.70	. .	30.024	.	66.2	
	34			33.0							29.9	21.5	35.6	29.2	29.05	. .				
	35				38.0						27.0	20.5	37.8	27.5	28.20	. .				
	36	δ Ursæ Minoris				44.0				18 22 42.79	27.2	19.8	32.2	27.2	26.60	. .				
	37						47.0				28.4	20.4	38.5	28.2	28.87	. .				
	38							53.0			32.8	24.5	37.5	32.6	31.85	. .	30.028	72.0	65.4	
	39								56.0		.	.	.	.	.	.				
	40	β Lyra	39.0	52.0	5.2	18.5	31.0	44.7	57.1	18 45 18.22	354 18 3.2	4.8	15.4	7.2	7.65	. .	30.030	71.0	65.0	
	41	ζ Aquilæ	41.3	52.5	3.8	15.0	26.1	37.4	48.8	18 59 14.99	334 45 37.2	32.5	40.8	32.2	33.17	. .	30.028	71.0	64.9	
	42	δ Aquilæ	6.5	17.3	28.0	39.2	50.4	1.4	12.3	19 18 39.30	323 56 8.0	11.9	22.0	13.8	13.92	. .	30.032	70.4	64.4	
	43	γ Aquilæ (Mic.)	18.2	29.5	40.5	51.7	3.0	14.0	25.2	19 39 51.73	331 21 15.0	19.1	28.2	18.9	20.30	41.075	30.030	70.0	64.1	
	†44	α Aquilæ	38.2	49.7	0.1	11.8	23.0	33.4	45.0	19 44 11.60	329 35 17.4	19.8	31.6	22.0	22.70	. .	30.040	69.8	63.7	
	45	β Aquilæ	7.3	18.5	29.4	40.3	51.2	2.4	13.3	19 48 40.34	327 8 55.5	59.8	72.4	62.3	62.50	. .	30.040	69.7	63.5	
	46	a^2 Capricorni	52.0	4.0	14.9	26.2	37.2	49.0	0.0	20 10 26.19	308 6 53.0	57.8	72.9	63.4	61.77	. .	30.046	69.5	62.6	
	47	61^1 Cygni	14.4	28.2	42.2	56.3	10.2	24.1	38.1	21 0 56.21	359 6 41.7	43.5	53.0	46.4	46.15	. .	30.048	68.4	62.7	
	48	ζ Cygni	41.0	53.8	6.0	18.9	30.8	44.2	56.2	21 7 18.70	350 42 57.5	60.6	70.4	61.9	62.60	. .	30.050	69.5	62.4	
	†49	α Cephei	40.0	4.5	27.0	50.5	14.0	37.2	0.4	21 15 50.52	23 2 38.4	31.3	46.4	38.5	38.60	. .	30.054	69.5	62.0	
	50	β Cephei	0.2	33.0	5.2	37.0	8.2	49.0	12.0	21 27 36.52	30 59 29.6	22.3	35.9	29.0	29.20	. .	30.048	69.5	61.7	
	51	Aquarii (7722)	45.0	57.2	8.3	19.4	30.5	41.2	53.3	22 3 19.27	308 48 55.7	58.4	72.9	64.0	62.78	. .	30.042	69.5	61.0	
	52	Neptune (Mic.)	50.0	1.4	12.5	23.6	34.5	44.9	..	22 6 17.82	" " "	"	"	"	"	33.305	30.043	69.2	60.8	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	c.	Error of Runs.	Mic. coin. At		1 rev. = 34″.406
h.	s.	s.	s.	s.	″	h.	revs.	
Aug. 18, 20	f 47.56	g 0.020	—0.142	—0.437	+0.00	20	40.092	
19, 20	48.88	.020			—0.25	10	.100	

44. Wire V recorded 22s.0
49. Wire V recorded 13s.0

Assumed Latitude 38° 53′ 39′.25 North.

COR. IN Æ.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean.
s.	M. s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″					° ′
. .	. . .	— 0 22.83	+ 1 5.97	50.11						Aug.	18,		(M.)	179 59
— 42.58	— 4.48	+ 0.01	— 0 16.32	343 50 33.39	59.58	1 58 36.46	+ 22 44 13.06	+ 7.04	+45.46	57″8	60″2	70″2	60″9	62″28
42.58	0.47	0.02	25.32	331 5 44.68						57.6	61.3	69.5	61.0	62.35
		15.43	25.35	331 5 29.24	. .	2 11 44.29	+ 9 59 16.63			58.3	60.2	69.8	60.2	62.12
42.58	— .45	0.04	41.33	323 41 44.40	. .	2 35 25.13	+ 2 35 24.07	7.04	35.66	56.8	60.0	69.4	61.4	61.90
42.59	+ 3.55	.02	40.00	324 35 36.38	. .	2 54 19.71	+ 3 29 16.05	7.03	+34.18	57.0	59.5	69.5	59.5	61.38
47.52	— 0.45	.01	40.68	323 55 30.71	62.00	19 17 50.19	+ 2 49 7.96	5.80	— 0.12	57.50	60.24	69.68	60.60	62.00
47.54	.47	+13 46.10	30.54	331 21 27.06	. .	19 39 2.39	+ 10 15 4.31	5.30	+ 2.85					
47.54	17.07	+ 2 26.55	32.92	329 34 49.45	. .	19 43 22.14	+ 8 28 26.70	5.47	4.47					
47.55	0.46	— 0 0.00	36.14	327 8 25.78	. .	19 47 51.02	+ 6 2 3.03	5.52	4.11					
47.57	.42	— 0.03	1 11.32	308 5 48.88	. .	20 9 36.87	— 13 0 33.87	6.43	11.99					
47.60	.67	+ 0 38.63	0 0.86	359 6 47.22	62.25	21 0 6.59	+ 38 0 24.22	4.17	26.70	Aug.	19,	10h.3	(M.)	179 59
47.61	.59	+ 0.01	— 9.20	350 42 48.36	. .	21 6 29.29	+ 29 36 25.36	+ 5.09	20.02	56.7	60.2	68.8	58.9	61.15
47.62	1.19	.00	+ 23.92	23 3 1.67	. .	21 15 0.32	+ 61 56 38.67	— 0.29	23.98	56.1	59.5	68.3	58.3	60.55
47.63	4.16	.00	— 32.11	330 17 19.29	. .	21 36 43.78	+ 9 10 56.29	+ 3.33	25.30	57.8	59.2	68.3	59.4	61.85
47.66	0.42	— 31.37	1 9.97	308 47 53.59	. .	22 5 41.02	— 12 18 29.46	6.11	28.33	57.2	59.2	68.4	58.5	60.83
47.66	.42	3 49.72	1 9.87	308 44 35.26	. .	22 2 29.68	— 12 21 47.74			57.0	69.1	68.2	59.3	60.90
47.68	.47	— 0 0.00	0 31.07	331 8 47.95	. .	22 33 53.49	+ 10 2 24.95	5.45	33.56	56.96	59.44	68.40	58.88	60.92
47.70	.42	+ 0.01	1 2.59	311 38 50.52	. .	22 51 30.45	— 9 37 41.50							
		— 18.21	1 2.60	311 38 32.39										
47.76	.58	+ 0.01	0 10.63	349 21 20.33	. .	0 0 33.19	+ 28 14 57.33	5.52	44.91					
47.76	.49	.00	— 25.88	335 26 38.47	. .	0 5 25.07	+ 14 20 15.47	5.81	42.28					
47.78	1.00	.00	+ 17.11	16 48 18.83	. .	0 31 56.55	+ 55 41 55.83	+ 5.13	53.79	Aug.	19,	Night.	(M.)	179 59
. .	. .	— 21.54	1 6.50	49 35 52.71						57.0	59.0	69.2	60.0	61.42
. .	. .	9.14	1 6.48	52.49						57.0	59.4	68.7	59.3	61.10
. .	. .	— 0 2.16	1 6.47	55.33						56.8	59.4	68.8	59.8	61.20
47.81	21.06	+ 0.07	1 6.46	55.25	. .	1 5 16.33	+ 88 29 30.95	— 12.20	+61.60	56.8	59.2	68.7	59.6	61.08
. .	. .	— 2.74	1 6.48	55.26						57.4	59.6	68.6	59.2	61.20
. .	. .	10.49	1 6.50	55.21						57.00	59.42	68.80	59.58	61.20
. .	. .	23.26	+ 1 6.52	50.38										
48.47	0.48	+14 28.11	— 0 23.13	334 13 2.65	60.92	9 53 10.95	+ 12 50 46.74							
		—17 19.80	— 23.69	333 41 14.18										
. .	. .	0 9.69	+ 1 1.92	47 42 24.93										
. .	. .	4.19	1 1.93	26.79						Aug.	20,	10h.4	(M.)	179 59
. .	. .	1.05	1 1.94	29.09						56.2	60.2	60.8	60.5	59.43
48.80	9.76	0.05	1 1.97	28.52	61.20	18 21 44.23	+ 86 36 6.08	— 59.10	—19.55	56.4	59.6	60.5	59.8	59.07
. .	. .	1.23	1 1.99	29.63						56.2	59.2	60.1	59.2	58.68
. .	. .	— 4.65	+ 1 2.02	29.22						56.0	59.3	59.9	59.0	58.55
. .	. .									56.4	59.2	60.0	58.9	58.62
48.82	0.62	+ 0.01	— 0 5.65	354 18 2.01	. .	18 44 28.78	+ 33 11 40.06	+ 3.83	12.83	56.24	59.50	60.26	59.48	58.87
48.83	.49	— .05	26.67	334 45 6.55	. .	18 58 25.67	+ 13 38 44.60	5.21	6.70					
48.85	.45	.06	41.23	323 55 32.63	. .	19 17 50.00	+ 2 49 10.68	5.81	— 0.21					
48.86	.47	+ 33.85	30.94	331 21 23.21	. .	19 39 2.40	+ 10 15 1.26	5.31	+ 2.72					
48.87	.47	— 0.05	33.29	329 34 49.36	. .	19 43 22.26	+ 8 28 27.41	5.48	4.75					
48.87	.46	.00	36.64	327 8 25.86	. .	19 47 51.01	+ 6 2 3.91	5.53	4.01					
48.89	.42	+ .08	1 12.33	308 5 49.53	. .	20 9 36.88	— 13 0 32.42	6.43	11.97	Aug.	20,	Night.	(M.)	179 59
48.92	.67	.06	0 0.88	359 6 45.33	. .	21 0 6.62	+ 38 0 23.38	4.17	26.41	56.5	58.4	60.7	58.7	58.65
48.93	.59	.09	— 9.30	350 42 53.39	. .	21 6 29.17	+ 29 36 31.44	+ 4.09	19.77	57.0	58.5	60.7	58.2	58.60
48.93	1.19	.01	+ 24.22	23 3 2.81	. .	21 15 0.40	+ 61 56 40.86	— 0.29	23.63	57.0	58.0	59.9	58.0	58.23
48.94	1.66	.04	+ 34.21	31 0 3.37	. .	21 26 45.92	+ 69 53 41.42	— 3.17	27.04	56.8	58.2	60.2	57.8	58.25
										56.4	58.2	59.7	57.7	58.00
48.97	— 0.42	+ 0.09	— 1 10.80	308 47 52.04	. .	22 2 29.88	— 12 18 29.91	+ 6.11	+28.28					
48.97	+ 5.19	— 3 52.88	— 1 10.73	308 43 59.14	. .	22 5 34.04	— 12 22 22.81			56.80	58.26	60.24	58.08	58.35

Object.	COR. IN Æ.	Observed Semi-diam.	
	Semi-Diam.	Hor.	Vert.
	M. s.	M. s.	′ ″
Mars .	+ 0 0.42	. . .	0 7.72
Saturn .	. 0.63	. . .	0 9.11
Sun . .	. . .	1 5.09	15 54.23

2, 20, 49. Unsteady.
22, 23, 27. Unsteady and blurred.
31. Beat of clock not heard well through noise of carpenters at work.
32. Through clouds.

DATE. 1847.	No. for ref	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Aug. 20	1	Sun, 1st & N. L. (Mic. 6)	5.2	16.2	27.3	38.6	50.3	1.4	12.5	9 56 38.79	333 39 9.4	12.2	15.9	14.0	12.87	40.097	30.084	70.7	72.2	M.
	2	Sun, 2d & S. L. (Mic. 2)	15.2	26.2	37.6	49.2	1.2	11.9	23.0	9 58 49.19	" " "	"	"	"	"	35.542	"	"	73.0	
	3	Venus, 1st & N. L.	51.2	3.0	14.2	25.0	36.2	47.4	58.3	12 29 25.04	314 8 40.5	44.5	51.9	48.3	46.30	. .	30.056	72.0	74.1	
	4	ε Ursæ Minoris	36.2	0.0	20.5	43.2	4.8	25.0	46.5	17 2 42.31	43 22 37.3	31.3	35.7	38.0	35.56	. .	30.052	72.8	67.5	
	†5	δ Ursæ Minoris	..	..	41.0	47.0	..	54.0	..	18 23 47.33	47 41 25.1	14.4	21.5	24.0	21.25	. .	30.054	69.7	61.7	
	6	α Lyræ	56.5	13.0	24.7	39.2	53.2	7.4	21.3	18 32 39.04	359 45 25.4	25.3	28.0	26.4	26.27	. .	30.056	69.5	61.4	
	†7	β Lyræ	40.2	53.2	6.3	19.5	32.4	46.0	59.0	18 45 19.50	354 18 4.4	5.2	6.9	7.8	6.07	. .	30.058	69.2	61.1	
	8	ζ Aquilæ	42.4	54.0	4.7	16.1	27.2	39.0	49.9	18 52 16.22	334 45 26.5	32.7	34.0	27.1	30.07	. .	30.058	68.9	60.4	
	9	δ Aquilæ	7.2	18.5	30.0	41.0	51.4	2.7	13.0	19 18 40.55	323 56 7.8	11.3	13.9	12.2	11.29	. .	30.056	68.5	60.0	
	10	γ Aquilæ	19.2	30.0	41.5	52.4	3.6	15.0	25.9	19 39 52.51	331 21 46.8	51.5	53.0	51.4	50.67	. .	30.056	68.4	60.2	
	11	α Aquilæ	..	50.0	1.2	12.4	24.2	35.2	46.3	19 44 18.22	329 35 19.1	20.2	24.9	23.2	21.85	. .	30.056	68.4	60.2	
21	12	Sun, 1st & N. L. (Mic. 6)	48.2	0.3	11.2	22.8	33.6	44.8	55.9	10 0 22.40	333 19 19.5	21.1	24.6	25.3	22.62d	40.120	30.084	72.0	77.2	
	†13	Sun, 2d & S. L. (Mic. 2)	59.0	10.1	20.9	32.2	43.3	55.2	6.2	10 2 32.41	" " "	"	"	"	"	35.524	30.082	72.0	78.0	
	†14	Venus, 1st L.	0.1	12.2	23.0	34.2	..	55.9	7.2	12 31 32.10	. . . .	.	.	.	.	. .				
	†15	α Serpentis	..	..	..	..	..	..	..	. . . .	328 1 37.9	41.0	47.0	35.3	40.42	. .	30.046	76.1	75.1	
	†16	β¹ Scorpii	52.0	4.0	15.2	27.0	37.8	50.0	1.5	15 57 26.79	301 44 50.4	52.6	59.5	59.5	55.50	. .	30.042	76.0	74.3	
	17	δ Ophiuchi	41.0	52.0	2.4	14.0	..	36.0	46.4	16 7 11.97	317 49 26.3	29.9	35.1	33.4	31.17	. .	30.040	75.5	74.0	
24	†18	Venus, 1st & N. L.	58.7	9.9	21.0	31.9	42.5	24.7	4.8	12 37 31.87	312 36 41.2	45.7	54.2	47.7	47.20		30.229	75.9	80.5	
	19	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	" " "	"	"	"	"	39.117				
	20	α Serpentis	6.4	18.0	28.7	40.0	50.2	1.2	13.0	15 57 39.64	328 1 36.6	40.8	48.1	42.3	41.95	. .	30.226	76.0	75.1	
	21	β¹ Scorpii	54.2	6.1	17.0	29.1	41.2	52.0	3.8	15 57 29.06	301 44 47.8	58.4	50.1	56.2	53.12	. .	30.230	75.5	73.6	
	22	α Scorpii	22.0	34.2	46.0	58.5	10.4	23.1	35.0	16 20 58.46	295 2 58.4	60.6	68.2	64.2	62.85	. .	30.236	75.0	72.4	
25	†23	β Lyræ	43.0	58.2	10.5	24.0	37.0	51.5	3.8	18 45 24.00	354 18 3.0	6.9	11.0	8.9	7.45	. .	30.284	72.0	55.1	Mc.
	24	ζ Aquilæ	47.2	58.5	9.2	20.2	32.0	43.5	54.8	18 59 20.77	334 45 34.3	40.0	42.0	39.5	38.95	. .	30.284	72.0	55.1	
	25	δ Aquilæ	11.5	23.5	34.5	45.2	56.2	7.2	16.2	19 18 44.90	323 56 8.3	15.1	19.0	16.2	14.67	. .	30.284	71.0	64.6	
	†26	γ Aquilæ	24.2	35.5	46.5	58.0	8.9	20.0	31.0	19 39 57.73	331 21 54.1	58.5	61.9	61.2	58.92	. .	30.284	70.1	63.9	
	27	a^2 Capricorni	58.5	10.2	21.1	31.5	43.5	54.2	5.1	20 10 32.01	. . . .	.	.	.	.	. .				
	28	α Cygni	26.2	41.5	57.0	12.0	27.8	43.0	58.5	20 36 12.29	5 50 51.0	51.5	57.8	57.0	54.32	. .	30.266	66.0	61.0	
	29	ζ Cygni	47.0	0.0	12.2	25.0	37.2	50.5	2.5	21 7 24.91	350 43 1.2	3.5	7.2	7.3	4.80	. .	30.264	67.0	60.6	
	30	β Cephei	6.0	38.0	10.0	42.5	14.2	46.0	18.0	21 27 42.10	30 59 32.6	35.5	31.3	30.8	32.55	. .	30.265	66.8	60.4	
	31	Aquarii (7722)	51.2	3.2	14.0	25.2	36.2	47.5	59.0	22 3 25.19	. . . .	.	.	.	.	. .				
	32	Neptune	18.2	30.0	41.2	52.0	3.2	15.1	26.2	22 6 52.27	. . . .	.	.	.	.	. .				
	33	Moon, 1st L.	12.0	24.0	35.0	46.5	58.0	9.0	20.0	22 9 46.36	. . . .	.	.	.	.	. .				
	34	Moon, 2d L.	31.5	43.0	54.2	5.8	17.0	28.5	39.8	22 12 5.69	. . . .	.	.	.	.	. .				
	35	λ Aquarii	3.5	14.5	25.2	37.0	48.0	59.0	10.0	22 45 36.74	312 44 13.2	17.8	25.8	22.2	19.75	. .	30.260	66.2	59.3	
26	36	Sun, 1st & N. L. (Mic. 6)	17.5	29.2	40.2	51.1	2.0	13.3	25.1	10 18 51.20	331 37 15.3	20.3	24.3	21.3	20.30	40.094	30.214	71.0	73.9	M.
	37	Sun, 2d & S. L. (Mic. 2)	27.4	38.3	49.9	1.0	11.9	23.1	34.0	10 21 0.80	" " "	"	"	"	"	35.421	"	"	72.9	
	†38	α Virginis	31.4	43.1	54.0	5.2	15.4	27.6	38.5	13 18 5.03	310 45 32.4	35.0	42.3	40.0	37.42	. .	30.180	74.5	79.6	
	39	α Coronæ Bor.	33.1	45.4	58.2	10.0	22.2	34.8	47.0	15 29 10.10	348 20 53.2	40.4	44.8	42.8	45.30	. .	30.154	73.8	74.0	
	40	α Serpentis	8.4	20.0	30.7	41.5	52.8	3.9	15.0	15 37 41.76	328 1 53.0	40.5	44.2	44.3	45.50	. .	30.152	73.8	73.8	
	†41	β¹ Scorpii	55.8	8.0	19.5	31.0	42.5	54.2	5.8	15 57 30.97	301 44 66.2	52.6	60.2	60.1	59.77	. .	30.148	73.8	73.6	
	42	δ Ophiuchi	44.9	56.0	6.9	17.4	28.4	39.7	50.7	16 7 17.71	317 49 41.2	28.6	34.9	33.6	34.57	. .	30.142	73.4	72.8	
	43	α Scorpii	23.8	36.1	48.0	59.9	12.2	24.9	36.6	16 21 0.22	295 3 1.2	1.8	7.9	6.5	7.85	. .	30.142	73.5	72.4	
	†44	α Lyræ	2.0	16.2	30.4	44.3	58.2	12.4	26.2	18 32 44.24	. . . .	.	.	.	.	. .				
	45	Aquarii (7722)	52.3	3.4	14.4	26.3	36.4	47.3	58.9	22 3 25.57	. . . .	.	.	.	.	. .				
	46	Neptune	..	..	..	..	..	..	20.5	22 6 46.84	. . . .	.	.	.	.	. .				
	†47	Saturn, 1st & N. L.	41.9	52.4	3.7	15.2	26.0	37.2	48.0	22 50 14.79	311 25 39.5	39.5	45.0	42.0	41.50	39.510	30.120	68.8	61.2	
	48	Saturn, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	" " "	"	"	"	"					
	†49	Moon, 2d L.	32.2	44.0	55.2	6.4	..	29.3	40.3	23 12 4.37	. . . .	.	.	.	.	. .				
	50	λ Piscium	40.2	52.0	3.1	13.9	24.3	..	47.5	23 35 13.66	322 3 45.0	44.4	50.4	47.9	46.92	. .	30.110	63.0	61.0	
	†51	α Andromedæ	52.5	4.8	16.1	29.7	41.9	54.1	7.0	0 1 29.44	349 21 30.4	28.4	31.5	30.0	30.07	. .	30.100	62.5	61.2	
	52	γ Pegasi	..	..	10.4	21.6	32.3	44.0	55.6	0 6 32.78	335 27 3.8	0.4	5.7	4.5	3.60	. .	30.100	62.5	61.2	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	c.	Error of Runs.	Mic. coin. At	
	h	s.	s.	s.	″	h.	revs.
Aug. 20,	19	f 50.03	g 0.040	—0.042	—0.437	+0.21	10	40.097
	21, 16	50.68	.030			+ .16	11	.102
	24, 16	53.11	.040			— .65	13	.107
	25, 20	54.79	.042			.45		
	26, 16	55.22	.035			.26	11	.094
	26 0	55.54	.035			— .26	20	.101

1 rev. = 34″.406

7. Wire I recorded 41s.2
26. Circle reading recorded 22′
44. Wire II, V recorded 15.2, 57.2
50. Wire VII recorded 6s.0

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					°
— 49.66	— 0 0.48	+14 28.18	— 0 23.68	333 53 17.37	58.89	9 56 53.85	+ 12 31 4.26							
		—17 17.08	0 24.21	333 21 31.58						Aug.	21.	10h.5	(M.)	179
49.77	.43	+ 0 0.02	— 1 1.60	314 7 45.61	58.87	12 28 35.94	— 6 58 34.86							
49.95	4.30	.00	+ 0 53.18	43 23 35.56	58.35	17 1 48.06	+ 82 17 9.64	— 17.07	—38.97	56″2	58″9	59″9	57″6	58″1
50.01	1 11.24	.05	+ 1 2.52	47 42 25.47	. .	18 21 46.08	+ 86 36 4.72	— 58.74	19.77	56.1	59.5	60.4	59.4	58.8
50.01	0 0.68	.03	— 0 0.24	359 45 26.00	. .	18 31 48.35	+ 38 39 6.90	+ 3.43	15.98	55.7	58.9	59.6	58.8	58.2
50.02	.62	+ .01	5.69	354 18 0.37	. .	18 44 28.86	+ 33 11 41.27	3.85	13.01	55.7	59.2	59.2	57.8	57.9
50.03	.49	— .03	26.93	334 45 3.11	. .	18 58 25 70	+ 13 38 44.01	5.22	6.83	56.5	59.8	60.1	57.9	58.5
50.04	.45	+ .05	41.62	323 55 29.72	. .	19 17 50.06	+ 2 49 10.62	5.82	— 0.30	56.04	59.26	59.84	58.30	58.3
50.05	.47	.06	31.20	331 21 19.53	. .	19 39 1.99	+ 10 15 0.43	5.32	+ 2.59					
50.05	6.02	.04	33.54	329 34 48.35	. .	19 43 22.15	+ 8 28 29.25	5.49	+ 4.63	Aug.	24.		(M.)	179
		+14 28.19	23.78	333 33 27.03	58.36	10 0 36.42	+ 12 11 14.62			56.3	59.0	60.7	57.4	58.3
50.50 —	0.48	—17 17.87	24.31	333 1 40.44						55.2	58.2	60.9	56.4	57.6
50.58 +	1.41	. . .	. . .	. . .	. .	12 30 44.05				56.6	58.9	60.9	57.4	58.4
. .	. .	0 0.01	34.66	328 1 5.63	. .	. . .	+ 6 54 46.52	. .	—42.89	55.8	58.0	59.9	56.4	57.5
50.68 —	0.41	.00	1 29.55	301 43 25.95	. .	15 56 35.70	— 19 22 53.16	7.71	31.21	55.7	58.1	60.2	57.0	57.7
50.69 +	1.40 —	.00	0 50.34	317 48 40.83	. .	16 6 22.68	— 3 17 38.28	6.98	35.54	55.92	58.44	60.52	56.92	57.9
52.97 —	0.42 +	.17	50.68	312 35 56.69	57.95	12 36 39.66	— 8 30 40.06							
. .	. . —	50.68	52.75	312 35 20.60										
53.09	.46 +	.04	34.85	328 1 7.14	. .	15 36 46.09	+ 6 54 48.44	6.83	42.98	Aug.	25.		(Mu.)	179
53.11	.41 —	.02	1 30.21	301 43 22.89	. .	15 56 35.54	— 19 22 55.81	7.76	31.32	57.9	60.1	61.0	60.5	59.8
53.12	.42 +	.01	1 59.47	295 1 3.39	. .	16 20 4.92	— 26 5 15.31	8.03	25.25	58.6	60.2	61.2	60.6	60.1
54.74	.62	.02	0 5.80	354 18 1.67	59.74	18 44 28.64	+ 33 11 41.18	3.93	13.86	59.8	60.2	61.2	60.3	59.8
54.76	.49 +	.10	27.40	354 45 11.65	. .	18 58 5.52	13 38 51.16	5.27	7.42	57.3	59.8	60.0	59.8	59.4
54.77	.45 —	.12	41.46	323 55 33.09	. .	19 17 49.68	+ 2 49 12.60	5.86	— 0.70	57.1	59.8	60.9	59.5	59.3
54.78	.47	.15 —	.31	331 21 27.56	. .	19 39 2.48	— 10 15 7.07	5.36	+ 1.99	57.74	60.02	61.06	60.14	59.7
54.81	.42	. . .	. . .	. . .	. .	20 9 36.78	. . . .	6.46						
54.82	.77 —	.01 +	5.89	5 50 0.20	. .	20 35 16.70	— 44 44 39.71	2.58	11.81					
54.85	.59 +	.16 —	9.40	350 42 55.56	. .	21 6 29.47	— 29 36 35.07	+ 4.10	18.33					
54.86	1.66 —	.07 +	34.57	31 0 7.05	. .	21 26 45.58	+ 69 53 46.56	— 3.10	24.90	Aug.	26.	10h.5	(M.)	179
54.89	0.42	. . .	. . .	. . .	. .	22 2 29.87	. . . .	+ 6.08	28.14	53.4	57.0	58.7	57.0	56.5
54.89	.42	. . .	. . .	. . .	. .	22 5 56.96				55.0	57.8	59.9	57.9	57.6
		. . .	. . .	. . .						53.9	58.1	59.2	57.4	57.1
54.89	.43									54.8	57.5	59.8	57.5	57.4
		. . .	. . .	. . .	. .	22 10 0.69				54.2	57.9	59.1	57.1	57.0
54.92	.42 —	.10 —	1 2.30	312 43 17.35	. .	22 44 41.40	— 8 23 3.14	5.90	+32.43	54.26	57.66	59.34	57.38	57.1
		+14 28.19	26.00	331 51 22.49	62.28	10 19 0.52	+ 10 29 9.62							
55.01	.47	—17 21.13	26.60	331 19 32.57										
55.12	.42 +	0 0.05	1 4.06	310 44 33.41	. .	13 17 9.49	— 10 21 44.50	7.87	—50.35					
55.19	.57 —	.02	0 11.52	348 20 33.76	. .	15 28 14.34	+ 27 14 10.73	6.14	49.98	Aug.	26.	17h.	(M.)	179
55.19	.46 +	.02	34.85	328 1 10.67	. .	15 36 46.11	+ 6 54 47.64	6.86	43.02	72.7	58.5	60.4	57.8	62.2
55.20	.41 —	.00	1 30.0	301 43 29.77	. .	15 56 35.36	— 19 22 53.26	7.80	31.39	72.4	59.2	60.7	58.6	62.7
55.21	.43 —	.00	0 50.63	317 48 43.94	. .	16 6 22.67	— 3 17 39.09	7.06	35.72	71.8	58.2	60.1	57.5	61.9
55.20	.42 +	.01	1 59.11	295 1 8.75	. .	16 20 4.60	— 26 5 14.28	8.06	—25.30	72.13	58.63	60.4	57.97	62.2
55.29	.68	. . .	. . .	. . .	. .	18 31 48.27	. . . .	3.55						
55.42	.42	. . .	. . .	. . .	. .	22 2 29.73	. . . .	6.07						
55.42	34.07	. . .	. . .	. . .	. .	22 4 51.01				Aug.	28.	18h.	(M.)	179
55.44 —	0.42 —	.11	1 3.91	311 24 37.45	. .	22 49 19.56	— 9 41 52.92			62.0	59.4	61.7	57.0	60.0
	—	.20	1 3.95	311 24 17.35						61.2	55.0	60.5	57.5	59.3
55.48 +	1.42	. . .	. . .	. . .	. .	23 10 1.10				61.9	58.5	60.5	57.2	50.5
55.50 +	3.21 +	.07	0 44.56	322 3 2.43	. .	23 34 17.48	+ 0 56 42.11	6.44	+37.76	61.0	59.5	60.2	57.2	59.4
55.53 —	0.58 +	.04	10.84	349 21 19.37	. .	0 0 33.33	+ 28 14 59.05	5.38	42.99	61.4	58.9	60.4	57.3	56.5
— 55.54 —	11.80 —	.00 —	26.10	335 25 37.50	. .	0 5 25.44	+ 14 20 17.18	+ 5.68	+40.85	61.50	58.86	60.66	57.24	59.5

Object.	COR IN R.	Observed Semi-Diam.	
	Semi-Diam.	Hor.	Vert.
	m. s.	m. s.	′ ″
Venus .	+ 0 1.10		
Sun . .	. .	1 5.00	15 53.29
Venus .	1.12		
Venus .	1.18	. .	0 18.4
Moon .	. .	1 9.66	
Sun . .	. .	1 4.80	15 54.96
Saturn .	+ 0 0.63		0 10.05
Moon .	— 1 9.41		

5. Observed for Dec. at wire IV.
13, 14. Through clouds.
15. Wires VI and VII uncertain; clock beat not well heard.
16. Clock beat drowned in noise of workmen.
18. Unsteady at wires V, VI, VII; through clouds.
38. Tremulous.

DATE. 1846.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS. A.	B.	C.	D.	Mean.	Mic.	Barometer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.
Aug. 26	1	α Cassiopeiæ	55.0	15.2	34.5	53.9	12.4	32.4	51.4	0 32 53.54	16 47 63.4	53.1	61.0	60.0	59.37	..	30.092
	2	Polaris	47.5								49 34 72.2	58.5	67.2	67.5	66.35	..	30.088
	3			49.0								62.7	47.8	57.5	57.4	56.35	..	
	4				40.0							56.0	38.9	50.5	50.4	48.95	..	30.088
	†5					47.0				1 6 40.27		53.8	39.4	50.2	49.2	48.15	..	
	6						35.0					54.9	44.8	50.5	50.2	49.95	..	30.086
	7							33.0				64.8	54.0	59.0	60.2	59.50	..	
	8								30.0		35 16.5	6.4	10.0	11.9	11.20	..	30.088
27	9	Sun, 1st & N.L. (Mic. 6)	58.4	10.6	21.0	32.2	43.3	54.0	5.7	10 22 32.17	331 16 21.3	20.0	22.8	22.3	21.61 *d*	40.094	30.078
	10	Sun, 2d & S. L. (Mic. 2)	7.6	19.4	30.5	40.9	52.3	3.0	15.0	10 24 41.24	" " "	"	"	"	"	"	30.078
	†11	α Coronæ Bor.	34.2	46.8	59.5	12.2	23.2	36.2	48.4	15 29 11.79	. . .	.	.	.	. .	. .	
28	12	α Scorpii	25.2	37.5	49.4	1.0	13.4	26.0	37.7	16 21 1.46	. . .	.	.	.	. .	. .	
	13	ε Ursæ Min. (Mic.)	43.0								43 22 32.2	21.6	27.6	28.9	27.58 *d*	40.409	30.020
	14			5.5								"	"	"	"	40.382	
	15				26.5							.	.	.	. .	. .	
	16					50.0				17 2 48.57		"	"	"	"	40.362	
	17						9.0					"	"	"	"	40.380	
	18							32.5				"	"	"	"	40.428	
	19								53.5			"	"	"	"	40.488	
	20	α Ophiuchi	15.5	26.9	38.2	49.4	0.4	12.0	22.9	17 28 49.33		.	.	.	. .	. .	
29	†21	δ Ursæ Minoris	..	..	44.0	48.5	52.0	56.5	..	18 24 20.25	47 41 31.0	15.9	25.0	35.2	26.77	..	30.182
	†22	α Lyræ	2.8	17.2	31.4	45.0	59.5	13.2	27.6	18 32 45.24	359 45 27.7	23.5	25.9	24.2	25.32	..	30.186
	†23	β Lyræ	46.5	0.2	12.5	26.0	39.1	51.9	5.4	18 45 25.94	354 18 7.6	3.9	7.4	5.7	6.15	..	30.190
	24	ζ Aquilæ	49.2	0.4	11.6	53.0	34.5	45.8	56.4	18 59 23.00	334 45 31.7	32.3	33.8	32.8	32.65	..	30.194
	25	δ Aquilæ	14.2	25.2	36.6	46.9	58.0	9.4	20.2	19 18 47.22	323 56 10.6	14.5	11.0	12.2	12.08	..	30.094
	†26	α Cygni	28.1	43.8	58.9	14.5	29.4	45.5	0.3	20 37 14.36	5 50 54.6	43.8	49.8	51.2	49.85	..	30.208
	27	61[1] Cygni	22.4	26.2	50.2	4.4	18.3	32.5	46.0	21 1 4.29	359 6 52.0	48.9	51.4	50.6	50.72	..	30.202
	28	α Cephei	48.0	12.0	35.4	58.2	21.0	45.2	..	21 15 46.63	23 2 46.4	34.4	41.8	42.4	41.25	..	30.204
	29	β Aquarii	..	8.5	19.7	31.2	42.0	52.6	4.4	21 24 36.40	314 53 15.6	13.4	19.4	16.8	16.30	..	30.206
	30	ε Pegasi	7.8	19.2	29.8	41.3	52.1	3.2	14.2	21 37 41.06	330 17 51.6	50.7	54.1	52.2	52.15	..	30.210
	31	Aquarii (7722)	53.2	4.5	15.6	27.4	38.5	49.3	0.4	22 3 26.99	308 48 64.6	59.5	68.3	66.7	64.77	..	30.208
	32	Neptune, (Mic. 3)	55.2	7.2	18.0	29.0	40.2	51.4	2.8	22 5 29.11	" " "	"	"	"	"	33.57	30.210
	33	ζ Pegasi	17.4	28.8	39.9	51.0	1.4	13.5	24.6	22 34 50.94	331 9 23.7	21.2	24.8	23.0	23.17	..	30.208
	†34	Saturn, 1st L.	51.4	3.5	14.0	25.2	36.0	47.4	58.2	22 49 25.10	. . .	.	.	.	. .	. .	
30	35	ζ Pegasi	18.4	30.2	40.5	51.8	3.0	15.0	25.0	22 34 51.98	. . .	.	.	.	. .	. .	
	36	α Pegasi	37.0	48.0	59.2	10.5	22.5	33.5	44.5	22 57 10.74	. . .	.	.	.	. .	. .	
	37	ι Piscium	34.0	45.0	56.5	..	18.0	29.0	40.0	23 33 7.08	. . .	.	.	.	. .	. .	
31	38	Sun, 1st & N. L. (Mic. 6)	35.0	45.0	57.4	8.8	19.9	30.7	42.0	10 37 8.47	329 51 5.5	4.7	6.9	6.5	5.90	40.092	30.124
	39	Sun, 2d & S. L. (Mic. 2)	44.2	55.2	6.3	17.0	28.9	39.7	51.0	10 39 17.47	" " "	"	"	"	"	35.327	"
	†40	Venus, 1st & N. L.	55.3	6.1	18.2	28.6	40.4	51.5	2.4	12 48 28.93	310 14 39.8	36.4	42.5	39.8	39.62	..	30.000
	41	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . .	" " "	"	"	"	"	38.935	"
Sept. 1	†42	Sun, 1st & N. L. (Mic. 6)	14.2	25.7	36.8	48.1	59.0	10.2	21.1	10 40 47.87	329 29 23.1	21.4	24.1	24.1	23.17	40.090	30.064
	43	Sun, 2d & S. L. (Mic. 2)	22.8	34.1	45.2	56.3	7.4	18.5	29.3	10 42 56.23	" " "	"	"	"	"	35.430	"
	44	α^2 Capricorni	2.8	14.2	25.5	36.5	..	59.2	10.0	20 10 34.70	308 7 3.0	1.2	7.8	4.5	4.12	..	30.056
	45	ζ Cygni	51.2	4.5	16.2	29.0	42.5	54.0	6.6	21 7 29.14	350 43 5.8	2.6	5.2	4.9	4.62	..	30.056
	46	β Aquarii	0.5	11.2	22.3	33.0	44.0	55.5	6.5	21 24 33.28	314 53 15.5	11.5	19.0	16.9	15.72	..	30.054
	47	Aquarii (7722)	..	..	18.2	29.5	40.0	52.0	3.2	22 3 40.58	308 49 4.4	1.5	7.0	6.5	4.85	..	30.054
	48	ζ Pegasi	20.2	31.5	42.2	53.0	4.2	15.5	26.1	22 34 53.24	331 9 23.3	20.5	24.7	23.5	23.00	..	30.054
	49	α Pegasi	38.2	49.5	0.5	12.2	23.5	34.8	46.5	22 58 12.17	335 30 10.6	12.5	14.2	14.2	12.87	..	30.050
	50	ι Piscium	35.0	46.0	57.2	8.2	19.5	30.5	41.5	23 33 8.27	325 55 14.9	12.0	17.0	14.4	14.57	..	30.046
	51	α Andromedæ	56.2	8.5	21.0	32.5	45.2	58.9	11.5	0 1 33.13	. . .	.	.	.	. .	. .	
	52	γ Pegasi	51.2	2.5	14.0	25.2	36.0	48.0	59.0	0 6 25.13	335 27 5.7	4.0	8.7	7.0	6.35	..	30.046

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.
	h.	s.	s.	s.	″	h.	revs.
Aug. 27, .	. .	*g* 0.024	—0.142	—0.437		11	40.094
28, 17	*f* 56.27	.020			— 0.10	17	.091
29, 20	56.91	.020			+ 0.14	22	.089
30, 23	58.07	.024					
31, .	. .	.026				11	.092
Sept. 1, 23	59.31	.028				11	.090

1 rev. = 34″.406

25. Wire II recorded 24s.2

Aug. 30. Clock altered 11*m.* by some person unknown
Sept. 1. Clock times of transit decreased 11*m.*

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					°
— 55.55	— 0 1.00	+ 0 0.09	+ 0 17.34	16 48 16.70	. .	0 31 56.99	+ 55 41 56.38	+ 4.96	+ 51.37	Aug. 27,	11h.	(M.)		179
. .	. . .	— 0 21.39	16.96	49 35 51.92	. .					61″2	59″5	61″6	57″2	59″8
. .	. . .	9.10	1 6.95	54.20	. .					61.1	58.6	59.9	57.4	59.5
. .	. . .	— 2.03	1 6.93	53.85	. .					61.15	59.05	60.75	57.3	59.5
55.52	— 21.98	+ 0.16	1 6.92	55.23	. .	1 5 22.77	+ 88 29 34.02	— 16.80	+ 59.33					
. .	. . .	— 2.62	1 6.93	54.26	. .									
. .	. . .	10.45	1 6.95	56.00	. .					Aug. 29,		(M.)		179
. .	. . .	— 0 23.24	+ 1 6.95	54.91	. .					64.2	60.3	62.3	61.2	62.0
	. . .	+14 28.19	— 0 25.86	331 30 23.94	. .					63.9	60.0	62.0	60.7	61.6
55.90	0.47	—17 19.37	— 0 26.46	330 58 35.78	59.56	10 22 40.33	+ 10 8 9.55			63.4	59.8	62.1	60.6	61.4
. .	.57	. . .	. . .	. . . .	. .	. . . .	. . . .	+ 6.16		63.9	59.6	62.4	61.2	61.7
56.26	.42	. . .	. . .	. . . .	. .	16 20 4.78	. . . .	+ 8.10		63.7	60.2	62.1	60.9	61.7
. .	. . .	+ 0 8.00	+ 0 52.71	43 23 28.29	. .					63.82	59.98	62.18	60.92	61.7
. .	. . .	7.44	52.71	27.73	. .									
					. .					Aug. 30,		(Mu.)		179
56.27	4.30	9.31	52.71	29.60	60.64	17 1 48.00	+ 82 17 7.67	— 15.70	— 39.30	62.2	58.2	60.4	59.0	59.9
. .	. . .	9.38	52.71	29.67	. .					62.9	59.3	60.9	59.6	60.6
. .	. . .	9.44	52.71	29.73	. .					61.9	58.1	60.3	58.6	59.7
					. .					62.6	58.9	60.3	59.6	60.3
. .	. . .	9.04	52.71	29.33	. .					61.9	58.9	60.1	60.0	60.2
56.28	0.48	. . .	. . .	. . . .	. .	17 27 52.57	. . . .	+ 5.87		62.30	55.68	60.40	59.36	60.1
56.88	1 42.16	+ 0 0.03	+ 1 2.13	47 42 28.93	61.72	18 21 41.21	+ 86 36 6.46	— 55.50	21.15					
56.88	0 0.68	— .02	— 0 0.25	359 45 25.05	. .	18 31 47.68	+ 38 39 2.58	+ 3.61	17.43	Aug. 31,	11h.	(M.)		179
56.89	.62	.00	5.66	354 18 0.49	. .	18 44 28.43	+ 33 11 38.02	4.00	14.47	62.6	59.8	60.2	59.8	60.6
56.89	.49	— .03	26.79	334 45 5.83	. .	18 58 25.62	+ 13 38 48.36	5.33	7.84	62.9	59.3	60.4	59.8	60.6
56.90	.45	+ .02	— 41.27	323 55 30.83	. .	19 17 49.87	+ 2 49 8.36	5.91	— 0.99	62.2	59.0	60·0	59.4	60.1
56.93	.77	+ .01	+ 5.86	5 50 55.72	. .	20 36 16.66	+ 44 44 33.25	2.62	+ 10.74	62.0	58.7	59.8	58.5	59.7
56.94	.67	— .04	— 0.89	359 6 49.79	. .	21 0 6.68	+ 38 0 27.32	4.21	23.67	62.8	59.0	60.3	59.3	60.3
56.94	+ 10.46	+ .01	+ 24.00	23 3 5.26	. .	21 15 0.15	+ 61 56 42.79	0.18	20.24	62.50	59.19	60.14	59.36	60.5
56.94	— 5.95	+ .03	— 57.47	314 52 18.86	. .	21 23 33.51	— 6 14 3.61	5.95	22.73					
56.95	0.47	+ .01	32.70	330 17 19.46	. .	21 36 43.64	+ 9 10 56.99	5.31	23.74	Sept. 1.		(Mu.)		179
56.96	.42	— .05	1 11.17	308 47 53.55	. .	22 2 29.61	— 12 18 28.92	6.06	28.09	60.3	60.5	62.8	58.0	60.4
56.96	.42	9 40.16	1 11.37	308 38 13.24	. .	22 4 31.73	— 12 28 9.23			60.4	60.5	62.9	58.4	60.4
56.97	.47	— 0 0.02	0 31.63	331 8 51.52	. .	22 33 53.50	+ 10 2 29.05	5.36	31.85	60.5	60.3	62.8	58.8	60.6
56.97	.42	. . .	. . .	. . . .	. .	22 48 28.34				60.4	59.9	62.0	58.4	60.1
58.06	.47	. . .	. . .	. . . .	60.18	22 33 53.45	. . . .	5.35		60.5	60.1	62.4	58.5	60.3
58.07	.49	. . .	. . .	. . . .	. .	22 57 12.18	. . . .	5.28		60.42	60.26	62.52	58.42	60.4
58.08	.45	. . .	. . .	. . . .	. .	23 32 8.55	. . . .	5.69						
. .	.47	+14 28.19	27.27	330 5 6.82	60.29	. . . .	+ 8 42 49.25			Sept. 3.	11h.	(M.)		179
. .		—17 24.29	27.85	329 33 13.76						59.7	57.0	59.1	56.8	58.1
. .	.42	0 0.00	48.31	310 13 51.31	. .	. . . .	— 10 52 51.07			62.0	59.8	59.2	58.5	59.8
. .		— 39.81	51.18	310 13 8.63						60.9	58.7	60.0	57.4	59.2
. .	— .46	+14 27.95	27.65	329 43 23.47	. .	. . . .	+ 8 21 7.22			61.8	58.8	60.0	58.3	59.7
. .	. . .	—17 21.85	28.27	329 11 33.05						60.4	57.4	58.6	57.1	58.3
59.25	+ 1.45	+ 0 0.14	1 10.51	308 5 53.75	60.41	20 9 36.90	— 13 0 27.41	6.51	11.89	60.96	58.34	59.38	57.62	59.0
59.27	— 0.59	+ .15	0 9.09	350 42 55.68	. .	21 6 29.28	+ 29 36 34.53	4.13	16.76					
59.28	.43	— .09	55.80	314 52 19.83	. .	21 23 33.57	— 6 14 1.32	5.95	22.62	Sept. 3.		(Mu.)		175
59.30	11.63	+ .14	1 9.12	308 47 55.87	. .	22 2 29.65	— 12 18 25.29	6.06	28.08	61.8	58.5	60.0	59.1	59.8
59.31	0.47	.05	0 30.69	331 8 52.36	. .	22 33 53.46	+ 10 2 31.20	5.34	31.43	61.8	59.0	60.0	59.7	60.1
59.32	.49	+ .02	25.43	335 29 47.46	. .	22 57 12.36	+ 14 23 26.30	5.27	34.29	61.9	58.8	60.0	59.0	59.9
59.34	.45	— 0 0.09	37.91	325 55 36.57	. .	23 32 8.48	+ 4 48 15.41	5.67	35.60	62.0	58.8	59.9	59.0	59.9
59.35	.58	. . .	. . .	. . . .	. .	0 0 33.20	. . . .	5.30		61.8	57.2	59.0	58.8	59.2
59.35	— 0 0.49	+ 0 0.01	— 0 25.56	355 26 41.16	. .	0 5 25.29	+ 14 20 19.14	+ 5.59	+ 39.84	61.86	58.46	59.78	59.12	59.2

Object.	COR. IN R.	Observed Semi-Diam.	
	Semi-Diam.	Hor.	Vert.
	m. s.	m. s.	′ ″
Sun . .	. . . .	1 4.53	15 54.08
Saturn .	+ 0 0.63		
Sun . .	. . . .	1 4.50	15 56.53
Venus .	+ 0 1.35		
Sun . .	. . . .	1 4.18	15 55.21

11. Clock beat drowned in noise of workmen.
21. Obs'd for dec. at wire IV.
22, 23. Blurred and unsteady. Obs'd with full aperture.
26. Unsteady.
40. Very unsteady. 41. —2″.87 applied for def. illum'n.
42. Through thin clouds.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	H. M. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Sept. 2	1	α Ophiuchi	55.0	..	..	28.5	40.0	..	2.2	17 27 31.42										M.
	2	Sun, 1st & N.L. (Mic. 6)	..	..	29.4	41.0	52.0	3.4	14.3	10 26 52.02	328 45 38.0	36.9	39.2	39.3	38.35	40.130	30.078	79.5	83.2	
	3	Sun, 2d & S.L. (Mic. 2)	16.2	27.3	38.7	49.5	1.0	11.9	23.0	10 48 49.66	"	"	"	"	"	35.224	" "	"	"	
	4								45.0											
	5							41.0												
	†6	Polaris, S. P.									52 35 33.2	18.2	18.0	28.2	24.40		30.040	82.0	85.9	
	†7					35.0				12 53 0.35										
	†8										34.9	20.1	28.4	30.3	28.43					
	†9										28.4	11.9	21.2	23.0	21.12					
	10	α Ophiuchi	55.8	7.0	18.0	29.2	40.1	52.2	3.5	17 27 29.40	333 47 40.9	38.1	43.2	40.7	40.72		30.030	80.9	80.4	
	11	μ^1 Sagittarii	42.0	53.8	5.5	17.2	29.0	40.5	52.0	18 4 17.14	300 2 32.2	29.0	35.2	32.8	32.30		30.030	81.0	79.5	Mu.
	12	α Lyræ	43.5	58.0	11.8	25.2	40.1	54.0	7.9	18 31 25.79	359 45 30.5	25.5	29.9	26.5	28.10		30.040	81.0	79.0	
	13	β Lyræ	27.2	40.5	52.8	..	19.0	32.5	45.5	18 44 6.25	354 18 9.8	5.0	9.1	7.5	7.85		30.048	80.9	79.4	
	14	δ Aquilæ	54.8	5.8	16.5	28.0	38.5	49.0	0.5	19 17 27.58	323 56 17.2	15.3	19.5	19.4	17.85		30.048	80.5	77.7	
	†15	α Aquilæ	26.5	37.5	48.5	59.0	10.5	21.8	33.0	19 42 59.54	329 35 25.3	21.4	27.0	26.0	24.92		30.050	80.0	77.2	
	16	α^2 Capricorni	41.5	52.5	3.5	14.5	25.8	37.0	48.0	20 9 14.68	308 6 55.0	56.9	62.6	61.8	59.07		30.050	79.8	77.2	
	17	61^1 Cygni	2.5	16.5	30.5	44.5	58.5	12.6	26.5	20 59 44.51							30.050	79.1	75.2	
	18	α Cephei	28.8	52.0	15.0	38.5	52.0	25.5	49.0	21 14 38.64	23 2 48.0	35.2	43.8	43.5	42.62		30.046	79.0	75.8	
	19	Aquarii (7722)	33.4	49.5	56.5	6.5	18.5	30.2	41.0	22 2 7.53										
	†20	Anonymous	..	..	28.0	39.5	50.5	1.5	13.0	22 4 50.50										
	21	Saturn, 1st & N. L.	7.2	18.5	29.5	40.0	50.5	1.5	13.5	22 46 40.10	311 11 19.9	17.2	24.8	23.8	21.35		30.034	78.0	75.0	
	22	γ Cephei	..	..	9.0	58.0	45.5	32.5	20.0	23 33 45.00	37 52 34.3	19.5	27.9	28.4	27.52		30.028	77.8	74.3	
	23	γ Pegasi	30.2	41.5	52.0	3.5	14.2	25.5	37.0	0 5 3.42	335 27 6.9	4.5	8.1	9.0	7.13					
4	24	Sun, 2d L.	54.0	4.8	15.9	27.2	38.1	49.0	1.0	10 52 27.14										M.
	25	γ Aquilæ	7.2	18.0	29.0	40.2	51.2	2.8	13.5	19 38 40.27										
	26	α^2 Capricorni	41.0	52.5	4.0	15.2	26.2	37.4	48.8	20 9 15.02	308 6 54.2	58.8	62.0	59.4	58.60		30.054	80.7	78.0	
	27	Aquarii (7722)	..	45.4	56.7	8.2	20.0	..	..	22 2 2.57	308 49 4.5	0.2	7.4	5.4	4.37		30.050	80.7	77.0	
	28	Neptune (Mic. 2)	0.5	11.2	22.3	33.5	46.7	57.0	8.0	22 3 34.17	"	"	"	"	"	42.748				
	29	ζ Pegasi	58.2	9.2	20.0	31.8	43.0	54.0	5.0	22 33 31.60	331 9 20.2	18.2	20.8	19.3	19.62		30.040	80.0	76.0	
	30	γ Pegasi	29.7	41.0	52.0	3.1	14.2	26.5	37.3	0 5 3.40	335 27 6.5	3.8	8.3	6.9	6.37		30.034	80.2	74.9	
6	†31	Sun, 1st & N.L. (Mic. 6)	..	..	25.0	35.0	47.2	57.9	8.9	10 57 46.80	327 38 62.0	58.7	63.2	60.4	61.07	40.111	30.128	..	80.6	
	†32	Sun, 2d & S.L. (Mic. 2)	9.8	21.0	32.0	43.2	54.0	5.0	16.1	10 59 43.01	"	"	"	"	"	35.392	30.128	79.1	80.4	
	33	α Herculis	48.2	0.0	11.2	22.4	33.9	45.2	56.3	17 7 22.47	335 41 12.2	14.2	11.0	10.4	11.95		30.110	80.2	76.1	
	34	α Ophiuchi	58.6	10.0	21.1	32.1	43.8	55.0	6.0	17 27 32.37	333 47 36.5	34.9	38.9	34.4	36.17		30.112	79.8	74.2	
	35	γ Draconis	52.5	10.2	28.0	45.9	3.2	21.0	38.2	17 52 45.57	12 36 68.7	57.1	66.4	63.0	63.70		30.108	79.1	72.0	
	36	α Lyræ	46.2	0.8	14.2	28.8	42.8	56.8	11.0	18 32 28.66	359 45 26.6	22.1	26.4	22.8	24.48		30.118	77.3	70.5	Mu.
	37	β Lyræ	30.0	43.2	56.2	..	22.8	36.0	48.5	18 44 9.45	354 18 12.0	12.4	11.4	8.1	10.98		30.118	77.2	69.9	
	38	Aquarii (7722)	37.0	..	..	..	..	..	..	. . . .	308 49 4.6	1.8	7.5	5.4	4.83		30.048	73.5	65.0	
	39	Neptune (Mic. 2)	50.0	1.0	12.0	23.2	35.0	46.0	57.0	22 3 23.45	309 7 4.6	1.8	7.5	5.4	4.83	40.812	30.048	73.5	65.0	
	†40	Saturn, 1st & N. L.	19.2	30.0	41.0	52.0	3.5	15.0	26.0	22 46 52.38	311 5 39.9	39.5	43.4	42.5	41.33		30.050	72.0	63.0	
10	41	α Lyræ	49.8	4.5	18.1	32.5	46.0	0.3	14.4	18 31 32.23										M.
	42	β Lyræ	33.5	46.5	0.2	12.2	26.2	39.0	52.0	18 44 12.55	352 18 14.8	10.5	13.6	13.2	13.03		30.234	70.0	62.0	Mu.
	43	δ Aquilæ	1.5	12.2	22.8	33.0	44.8	55.5	7.0	19 17 33.83										
	44	γ Aquilæ	13.0	24.5	35.0	46.8	57.0	9.0	20.0	19 38 46.41	331 21 60.1	62.9	59.9	61.1	61.00		30.240	69.0	61.2	
	45	α^2 Capricorni	47.0	59.0	..	21.0	32.5	44.0	55.5	20 9 23.17	308 6 59.9	60.3	67.2	65.9	63.32		30.204	68.5	60.0	
	46	α Cygni	14.2	30.5	45.5	1.2	16.8	32.0	47.2	20 36 1.06	5 50 58.8	50.5	55.7	57.4	55.60		30.238	77.5	59.5	
	47	β Aquarii	45.0	56.0	7.0	18.0	29.0	40.5	51.0	21 23 18.07										
	48	ε Pegasi	54.8	6.2	17.5	28.5	39.5	51.0	1.5	21 36 28.43	330 17 58.9	57.2	61.0	59.3	59.10		30.240	65.9	59.0	
	49	Aquarii (7722)	40.8	51.8	3.0	14.5	25.8	..	..	22 2 3.18	308 49 4.9	3.8	9.5	9.0	6.80					
	50	α Pegasi	23.0	34.8	46.0	56.8	7.0	20.0	31.0	22 56 56.94	335 30 17.8	18.2	20.8	19.9	19.18		30.240	64.5	57.5	
	51	α Andromedæ	41.0	53.2	5.8	18.0	31.1	44.3	55.2	0 0 18.17										
13	†52	α Lyræ	..	..	..	..	..	2.2	16.0	18 32 9.10	359 45 30.7	27.2	30.1	28.0	29.00		29.990	69.4	64.0	M.

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.	
	h.	s.	s.	s.	″	h.	revs.	
Sept. 2,		g0.030	—0.142	—0.437				
3,	19	s 22.92	.040		—0.56	11	40.130	
4,	22	22.40	.044			11	.113	
6,	17	20.35	.040		.45	11	.111	M.
	19	19.61			.05			Mu.
10,	19	16.12	0.36					
13,	19	14.09	0.44			20	.118	

1 rev. = 34″.406

19. Transit recorded 22h. 3m., &c.
20. Supposed to have been observed for Neptune.
41. Personal equation not used in reducing.

Sept. 2, 16h. Clock put back 18m.

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					° ′
. .	— 0 3.27	. . .	. . .	. . .	59.07	. . .	. . .	+ 5.96			Sept. 4	22h.	(M.)	1795
+ 23.25	11.54	+14 28.43	— 0 28.53	328 59 38.25	} . .	10 48 8.09	+ 7 37 19.47			62″5	58″8	61″5	58″4	60″30
	0.46	—17 28.91	29.10	328 27 40.34	}					62.4	59.2	61.2	58.0	60.20
. .	. . .	. . .	. . .	. . .	. .					61.9	58.8	61.4	58.9	60.25
. .	. . .	. . .	. . .	. . .	. .					62.6	59.0	61.2	58.3	60.28
. .	. . .	+ 0 1.67	+ 1 10.96	52 35 37.03	. .	1 5 21.59	+ 88 29 38.95	— 21.15	+57.01	62.0	58.6	61.0	58.7	60.07
23.17	+11 58.07	. . .	. . .	. . .	. .									
. .	. . .	2.28	1 10.96	41.86	. .					62.82	58.88	61.26	58.46	60.22
. .	. . .	+ 11.63	1 10.96	43.71	. .									
22.99	— 0 0.48	— 0.06	— 0 27.03	333 47 13.53	. .	17 27 51.91	+ 12 40 53.81	+ 5.97	—26.92					
22.96	.41	.05	1 34.78	300 0 57.44	59.80	18 4 39.69	— 21 5 23.11	7.55	8.61		Sept. 6	Day.	(M.)	1795
22.94	.68	+ .08	0 0.23	359 45 27.95	. .	18 31 48.05	+ 38 39 7.40	3.72	18.10					
22.93	.61	+ .02	5.49	354 18 2.38	. .	18 44 28.57	+ 33 11 41.83	4.10	15.14	60.5	56.8	57.4	55.0	57.43
22.91	.45	— .13	40.20	323 55 37.52	. .	19 17 50.04	+ 2 49 16.97	5.97	— 1.30	60.6	56.9	58.2	55.2	57.73
22.89	.47	— .11	32.44	329 34 52.38	. .	19 43 21.96	+ 8 28 31.83	5.61	+ 3.19	60.9	57.2	58.7	55.2	58.00
22.87	.42	+ .19	— 1 10.29	308 5 48.93	. .	20 9 37.13	— 13 0 31.62	6.52	11.90	61.1	56.8	58.2	55.3	57.85
22.84	.67	. .	. . .	. . .	. .	21 0 6.68	. . . .	4.25		61.2	57.4	58.4	55.4	58.10
22.83	1.19	— .06	+ 0 23.57	23 3 6.13	. .	21 15 0.28	+ 61 56 45.58	0.10	18.62	60.86	57.02	58.16	55.22	57.82
22.80	0.42	. .	. . .	. . .	. .	22 2 29.91	. . . .	+ 6.05						
22.80	11.64	. .	. . .	. . .	. .	22 5 1.66					Sept. 6		(Mu.)	1795
22.77	0.42	— .12	— 1 11.20	311 10 10.08	. .	22 47 3.08	— 9 56 10.52			61.4	57.8	58.9	59.0	59.28
22.74	50.43	+ .27	+ 0 43.18	37 53 10.97	. .	23 33 17.31	+ 76 46 50.42	— 2.46	46.76	61.0	57.6	57.4	58.5	58.62
22.72	0.49	+ .01	— 25.37	335 26 41.76	. .	0 5 25.65	+ 14 20 21.21	+ 5.56	39.52	61.4	57.9	57.0	58.5	58.70
22.59	.46	. .	. . .	. . .	. .	10 51 45.04				61.4	57.6	57.6	58.4	58.75
22.51	.47	. .	. . .	. . .	. .	19 39 2.31	. . . .	5.47		61.2	57.9	58.0	57.5	58.65
22.49	— .42	— .42	1 10.23	308 5 47.95	60.22	20 9 37.09	— 13 0 33.02	6.53	11.91					
22.40	+ 5.17	.46	1 8.58	308 47 55.33	. .	22 2 30.14	— 12 18 25.64	6.05	28.07	61.28	57.76	57.78	58.38	58.80
22.40	0.42	13 10.18	1 8.92	308 34 45.27	. .	22 3 56.15	— 12 31 35.70							
22.38	.47	0 0.14	0 30.50	331 8 48.98	. .	22 33 53.51	+ 10 2 28.01	5.33	31.03					
22.31	.49	— .04	25.34	335 26 40.99	. .	0 5 25.22	+ 14 20 20.02	5.54	+39.37		Sep.10		(Mu.)	1795
	11.52	+14 28.19	— 30.06	327 52 59.20	} 59.82	10 58 59.50	+ 6 30 44.85			62.1	60.3	60.9	61.7	61.25
20.59	0.46	—17 22.70	30.72	327 21 7.65	}					62.2	59.7	60.9	61.1	60.98
20.35	.49	0 0.10	25.08	335.40 46.77	. .	17 7 42.33	+ 14 34 28.20	6.05	—30.79	62.3	61.2	62.4	61.5	61.85
20.33	.48	.05	— 27.42	333 47 8.70	. .	17 27 52.22	+ 12 40 50.13	6.03	—27.01	62.6	60.6	61.5	62.0	61.67
20.31	.89	— .13	+ 0 12.52	12 37 16.09	. .	17 53 5.09	+ 51 30 57.52	2.59	+29.21	62.8	59.0	61.2	61.7	61.05
19.61	.68	+ .05	— 0 0.24	359 45 24.29	58.80	18 31 47.59	+ 38 39 4.74	3.79	—18.45					
19.61	.61	.01	0 5.60	354 18 5.39	. .	18 44 28.45	+ 33 11 45.84	4.16	—15.50	62.30	60.16	61.38	61.60	61.36
. .	.42	.12	1 10.22	308 47 54.73	. .	. . . .	— 12 18 24.82	6.05	+28.08					
19.47	.42	+14 13.53	1 10.59	308 33 40.70	. .	22 3 42.50	— 12 32 38.35				Sep.13	18h.	(M.)	1795
19.44	.42	— 0 0.04	1 12.93	311 4 28.40	. .	22 46 12.03	— 10 1 51.15			62.5	59.0	58.8	58.7	59.75
16.17	.68	. .	. . .	. . .	. .	18 31 47.72	. . . .	3.89		61.8	58.9	60.7	59.4	60.20
16.16	.62	+ 0 0.02	0 5.72	354 18 7.32	. .	18 44 28.09	+ 33 11 45.21	4.24	—15.92	61.4	58.7	60.9	58.5	59.88
16.14	.45	. .	. . .	. . .	. .	19 17 49.52	. . . .	6.07		61.0	58.5	60.3	58.0	59.45
16.13	.47	.01	0 31.33	331 21 29.68	. .	19 39 2.05	+ 10 15 7.57	5.55	+ 0.49	61.9	58.4	60.3	58.1	59.67
16.11	2.29	.01	— 1 13.20	308 5 50.13	. .	20 9 36.99	— 13 0 31.98	6.59	11.95					
16.10	0.75	.01	+ 0 5.89	5 51 1.50	. .	20 36 16.41	+ 44 44 39.39	2.80	7.80	61.72	58.70	60.20	58.54	59.79
16.07	.43	. .	. . .	. . .	. .	21 23 33.71	. . . .	5.99						
16.06	— .47	.01	+ 0 32.87	330 17 26.24	. .	21 36 44.02	+ 9 11 4.13	5.34	22.35					
16.05	+ 10.79	.01	— 1 11.52	308 47 55.29	. .	22 2 30.02	— 12 18 26.82	6.05	28.15		Sep.13	0h.	(M.)	1795
16.01	— 0.49	.01	0 26.34	335 29 52.85	. .	22 57 12.46	+ 14 23 30.74	5.22	+32.91	61.4	58.5	60.2	58.5	59.65
15.97	.58	. .	. . .	. . .	. .	0 0 33.56	. . . .	5.19		61.5	59.0	60.7	59.0	60.05
14.11	— 0 35.72	+ 0 0.01	— 0 0.24	359 45 28.75	59.79	18 31 47.49	+ 38 39 8.23	+ 3.96	—19.12	61.45	58.75	60.45	58.75	59.85

	Object.	COR. IN R.	Observed Semi-diam.	
		Semi-Diam.	Hor.	Vert.
		m. s.	m. s.	′ ″
2	Sun . .	. . . .	1 4.36	15 58.95
1	Saturn .	+ 0 0.63		
24	Sun . .	— 1 4.23		
31	Sun . .	. . . .	1 3.61	15 55.78
40	Saturn .	+ 0 0.63		

1, 7. Through clouds.
6. Obs'd for dec. at 12h. 58m.55s.
8. " " " 13 11 55
9. " " " 13 20 10
31. Obs'n of 1st L. very poor.
52. Obs'd for dec. at wire VII.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Sept.13	1	γ Aquilæ	15.0	26.4	37.0	48.5	59.1	11.2	22.0	19 38 48.46		.	.	.	.	. .				
	2	α Aquilæ	35.2	46.3	57.2	8.4	19.5	30.8	41.5	19 43 8.42		.	.	.	.	. .				
	3	β Aquilæ	4.4	15.0	26.1	37.3	48.4	59.7	10.3	19 47 37.31		.	.	.	.	. .				
	4	Polaris	45.5								49 35 18.0	6.4	14.7	15.4	13.62	. .	30.042	63.5	56.8	
	5			48.5							34 67.6	54.8	63.7	63.7	62.45	. .				M
	6				44.0						60.7	48.0	56.7	55.7	55.27	. .	30.044	61.7	55.5	
	7					43.0				1 5 37.43	61.9	48.4	57.0	56.8	56.03	. .				
	8						14.0				63.2	49.0	58.5	57.8	57.12	. .				
	9							32.0			68.3	55.5	63.5	64.0	62.82	. .	30.042	.	55.5	
	10								25.0		. .	.	.	.	1. .	. .				
14	11	Sun, 1st & N. L. (Mic.)	56.5	8.1	19.2	30.2	40.9	52.0	3.2	11 26 30.01	324 37 13.4	13.2	17.7	15.7	5.00	40.125	30.178	62.3	61.2	
	12	Sun, 2d & S. L. (Mic. 2.)	5.2	16.2	27.2	38.0	49.0	0.2	11.2	11 28 38.14	" " "	"	"	"	"	35.164	"	"	"	
	13	α Bootis	..	6.0	17.9	29.2	41.0	52.5	4.0	14 8 35.10	341 5 34.7	33.7	36.3	36.4	35.27	. .	30.168	64.5	61.6	
	14	α Herculis	56.0	7.0	18.5	29.8	40.9	52.5	3.9	17 7 29.80	335 41 13.1	12.2	15.5	13.9	13.67	. .	30.186	64.8	60.5	
	15	α Ophiuchi	5.5	17.6	28.5	39.6	51.0	2.2	13.2	17 27 39.66	333 47 41.2	38.8	43.0	40.5	40.87	. .	30.182	64.5	59.5	
	†16	γ Draconis	..	..	..	..	10.0	27.9	44.9	17 53 27.60	12 37 12.2	2.5	2.5	6.5	6.92	. .	30.176	64.0	58.0	
	17	μ¹ Sagittarii	51.2	4.0	15.0	27.0	38.2	50.5	2.5	18 4 26.92	300 2 35.3	39.0	32.9	36.7	35.85	. .	30.176	63.5	57.6	
15	18	Sun, 2d & S. L. (Mic.2)	42.2	53.0	3.9	15.0	25.9	37.1	48.0	11 32 15.01	324 14 14.5	15.9	15.5	15.0	15.22	35.060	30.256	62.5	62.9	
	19	Sun, N. L. (Mic.6)	..	..	..	..	..	..	..	. . .	" " "	"	"	"	"	40.118	"	"	"	
	20								9.0		52 34 69.8	55.2	65.9	65.4	64.07	. .	30.228	63.2	63.7	
	21							6.5			" " "	"	"	"	"	40.532				
	22						2.0				35 29.4	15.3	23.3	24.9	23.23	. .	30.226	64.5	64.1	
	23	Polaris, S. P.				0.0				13 5 0.02		30.5	18.2	25.4	27.8	25.47	. .			
	24				59.0							31.5	16.8	24.9	26.2	24.85	. .	30.218	65.1	64.1
	25			48.0								23.4	8 8	15.5	18.9	16.65	. .			
	26		56.0								34 72.5	57.0	67.5	67.4	66.10	. .	30.214	65.0	64.5	
	†27	α Bootis	55.4	7.0	19.1	30.2	42.2	53.4	5.6	14 8 30.42	341 5 37.5	36.2	40.0	39.9	38.40	. .	30.202	65.3	65.8	
	28	μ¹ Sagittarii	53.0	5.0	16.2	28.2	39.9	51.4	3.3	18 4 28.14	300 2 36.2	33.2	40.0	38.5	36.92	. .	30.188	64.5	59.3	
	29		13.0								. .	.	.	.	. .	. .				
	30			20.0							. .	.	.	.	. .	. .				
	31	δ Ursæ Minoris			23.0					18 18 24.20	47 41 40.1	26.0	34.2	35.9	34.05	. .				
	32					30.5						37.4	21.9	30.4	33.0	30.67	. .	30.190	64.2	58.8
	33						34.5					38.1	24.5	31.4	33.8	31.95	. .			
	34	α Lyræ	54.0	8.4	22.2	36.8	50.4	4.5	18.3	18 31 36.37	359 45 34.2	29.4	31.2	29.6	31.10	. .	30.190	64.1	57.5	
	†35	γ Aquilæ	..	..	..	..	..	13.0	24.2	19 39 18.60	331 21 59.7	60.2	62.2	61.2	60.82	. .	30.190	61.3	53.8	
	36	Aquilæ (6825)	8.0	19.2	30.4	41.5	52.7	4.2	15.0	19 46 41.57	329 11 30.0	30.5	35.3	33.5	32.07	. .	30.190	61.0	53.4	
	‡37	α Pisces Aust. (Mic. 1.)	25.4	38.4	50.2	3.8	16.0	28.8	41.2	22 49 3.34	291 2 6.0	2.0	8.3	5.4	5.42	43.310	30.184	58.5	49.5	
	38	α Andromedæ	..	..	..	22.4	34.4	47.2	59.2	0 0 40.80	349 21 40.3	37.5	41.2	38.1	39.27	. .	30.180	58.0	48.2	
	39		39.0								49 35 25.4	10.7	18.8	21.1	19.00	. .	30.178	58.5	48.0	
	40			43.0							34 73.5	59.8	67.6	69.2	67.52	. .				
	41				39.0						64.9	48.0	60.2	59.4	58.13	. .				
	42	Polaris				38.5				1 5 35.98	61.4	47.6	57.2	56.4	55.65	. .	30.176	58.5	48.0	
	43						29.0				65.5	50.9	61.7	61.4	59.88	. .				
	44							33.5			72.9	58.2	67.5	67.9	66.62	. .				
	45								29.5		35 25.2	10.9	17.9	20.0	18.50	. .	30.170	58.9	47.8	
16	46	Sun, 2d L.	18.4	29.2	40.4	51.2	2.1	13.2	24.2	11 35 51.24	. .	.	.	.	. .	. .				
	47								6.0		52 34 70.6	55.0	66.1	65.4	64.28	. .	30.144	68.8	70.2	Mu.
	48							3.0			35 22.0	7.4	18.4	18.4	16.55	. .				
	49						0.5					28.8	14.9	24.4	25.5	23.40	. .	39.146	69.2	70.2
	50	Polaris, S. P.			54.0					13 5 0.33		27.2	10.5	21.4	23.5	20.65	. .			
	51			47.0								20.6	5.0	17.1	17.3	15.00	. .	30.138	69.6	70.6
	52		11.5								34 69.3	53.2	64.4	63.2	62.52	. .	30.136	70.0	70.8	

DATE.	CLOCK. +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	
h.	s.	s.	s.	s.	″	h.	rev.
Sept. 14, 17	s 13.11	g 0.046	+ 0.142	— 0.437	— 0.16	12	40.125
15, 19	11.86	.046			— 0.06	13	.118
						20	.119
16, 18	10.63	.035			— 0.56		

1 rev. = 34″.406

27. Wire VI recorded 54s.4

Assumed Latitude 38° 53′ 39″.25 North.

No. for ref.	COR. IN R. Clock.	COR. IN R. Inst.	COR. IN DEC. Inst.	COR. IN DEC. Object.	Corrected Reading.	Zenith Point.	OBSERVED R. A.	OBSERVED DEC.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 DEC.	NADIR POINT. A.	B	C.	D.	Mean.
	s.	M. s.	′ ″	′ ″	° ′ ″	″	H. M. S.	° ′ ″	s.	″					° ′
1	+ 14.06	— 0 0.47	. .	. .	. . .	. .	19 39 2.05	. . .	+ 5.59						
2	14.06	.47	. .	. .	. . .	. .	19 43 22.01	. . .	5.75		Sept.	14,		(M.)	179 59
3	14.05	.46	. .	. .	. . .	. .	19 47 50.90	. . .	+ 5.79		61″9	59″2	59″2	58″0	59″58
4	. .	. .	— 0 22.63	+ 1 7.46	49 35 58.45	. .					62.0	58.8	59.8	57.9	59.62
5	. .	. .	10.01	1 7.46	59.91	. .					61.8	59.0	59.8	57.5	59.53
6	. .	. .	2.58	1 7.62	60.31	. .					61.2	58.6	58.7	57.2	58.92
7	13.86	— 22.04	0.09	1 7.63	63.57	59.85	1 5 29.25	+ 88 29 40.27	— 25.45	+53.50	61.2	58.5	58.5	57.1	58.83
8	. .	. .	2.28	1 7.63	62.47	. .									
9	. .	. .	— 0 9.97	+ 1 7.63	60.48	. .					61.62	58.82	59.20	57.54	59.30
10	. .	. .				. .									
11	13.37	0.45	+14 28.26	— 0 35.44	324 51 7.82	59.30	11 27 46.99	+ 3 28 49.13							
12			—17 30.29	36.17	324 19 8.54										
13	13.24	6.36	0 0.02	19.60	341 5 15.65	. .	14 8 41.98	+ 19 58 55.60	+ 7.26	—58.78	Sept.	15,	12h.	(M.)	180 0
14	13.10	0.49	.04	25.93	335 40 47.70	. .	17 7 42.41	+ 14 34 27.65	6.21	30.88	5.6	3.6	3.4	2.4	3.75
15	13.09	.48	— .02	— 28.29	333 47 12.56	. .	17 27 52.27	+ 12 40 52.51	6.18	27.21	4.4	2.3	2.1	1.5	2.58
16	13.06	36.07	+ .06	+ 12.91	12 37 19.89	. .	17 53 4.59	+ 51 30 59.84	2.86	29.66	4.6	2.2	2.9	1.5	2.80
17	13.05	0.41	— .02	— 1 39.42	300 0 56.41	. .	18 4 39.56	— 21 5 23.64	+ 7.75	— 8.57	5.0	2.3	2.8	1.5	2.90
18			—17 34.36	— 0 36.68	323 56 4.18						4.5	1.9	2.2	1.5	2.53
19	12.18	— 0.45	+14 28 20	— 35.95	324 28 7.49	62.91	11 31 22.75	+ 3 5 42.17			4.82	2.46	2.68	1.68	2.91
20	. .	. .	0 22.99	+ 1 14.37	52 36 41.43	. .									
21	. .	. .	24.60	1 14.39	43.06	. .									
22	. .	. .	2.71	1 14.42	40.36	. .									
23	12.11	+ 22.05	0.02	1 14.46	39.95	. .	13 5 34.18	+ 88 29 42.27	— 26.15	+52.98					
24	. .	. .	2.34	1 14.47	41.66	. .					Sept.	15,	18h.	(M.)	180 0
25	. .	. .	9.45	1 14.50	40.60	. .					3.2	1.0	2.2	0.5	1.73
26	. .	. .	22.03	1 14.52	42.65	. .					5.5	3.0	3.5	2.6	3.65
27	12.06	— 0.52	0.01	— 0 19.47	341 5 18.94	. .	14 8 41.96	+ 19 58 55.28	+ 7.27	—58.67	4.6	1.7	2.9	1.4	2.65
28	11.88	.41	+ 0.01	— 1 39.12	300 0 57.81	62.59	18 4 39.61	— 21 5 25.53	+ 7.77	8.56	4.5	1.9	2.9	0.7	2.50
29	. .	. .	. .	. .	. . .	. .					4.2	1.5	2.2	1.0	2.23
30	. .	. .	. .	. .	. . .	. .					4.9	2.3	2.9	1.0	2.78
31	11.89	+ 2 54.99	— 1.02	+ 1 3.20	47 42 36.23	. .	18 21 31.06	+ 86 36 11.35	— 48.81	23.20	4.48	1.90	2.77	1.20	2.59
32	. .	. .	+ 0.01	1 3.20	33.88	. .									
33	. .	. .	— 1.20	+ 1 3.20	33.95	. .									
34	11.86	— 0 0.68	0.01	— 0 0.24	359 45 30.85	. .	18 31 47.55	+ 38 39 7.51	+ 4.01	—19.26					
35	11.81	28.37	.02	31.75	331 21 29.05	. .	19 39 2.10	+ 10 15 5.71	5.62	+ 0.16	Sept.	16,		(Mu.)	180 0
36	11.80	0.46	— .01	— 34.70	329 10 57.38	. .	19 46 52.91	+ 8 4 34.04	5.75	2.44	4.1	2.2	3.7	1.3	2.83
37	11.66	.42	—18 39.98	+ 2 33.76	290 40 51.68	. .	22 49 14.58	— 30 25 31.66	6.31	34.25	4.3	2.2	3.6	1.5	2.90
38	11.61	19.25	+ 0 0.05	— 0 11.05	349 21 28.21	. .	0 0 33.16	+ 28 15 4.87	+ 5.14	38.50	4.8	2.1	3.0	1.4	2.83
39	. .	. .	— 21.85	+ 1 8.95	49 36 6.10	. .					4.2	2.0	3.0	2.0	2.80
40	. .	. .	9.53	1 8.96	6.95	. .					4.3	1.0	2.6	1.6	2.35
41	. .	. .	2.24	1 8.95	4.84	. .									
42	11.56	22.05	0.03	1 8.95	4.57	. .	1 5 25.49	+ 88 29 42.09	— 26.39	52.80	4.32	1.90	3.18	1.56	2.74
43	. .	. .	2.66	1 8.95	6.17	. .									
44	. .	. .	10.48	1 8.96	5.10	. .									
45	. .	. .	— 23.16	1 8.97	4.31	. .									
46	10.85	— 0.45	. .	. .	. . .	. .	11 34 57.64				Sept.	17,	12h.	(M.)	180 0
47	. .	. .	+ 23.02	1 13.26	52 36 40.56	62.74					3.5	2.4	3.5	0.4	2.45
48	. .	. .	10.38	1 13 28	40.21	. .					2.5	1.9	3.1	0.3	2.20
49	. .	. .	2.80	1 13.31	39.51	. .					3.9	1.9	3.0	0.5	2.33
50	+ 10.80	+ 22.34	2.18	1 13.38	36.21	. .	13 5 33.49	+ 88 29 44.74	— 26.61	+52.63	4.0	2.0	3.4	0.6	2.50
51	. .	. .	9.34	1 13.38	37.72	. .					3.6	2.0	3.0	0.4	2.25
52	. .	. .	+ 22.41	+ 1 13.37	38.30	. .					3.70	2.04	3.20	0.44	2.35

No.	Object.	COR. IN R. Semi-Diam.	Observed Semi-diam. Hor.	Vert.
		M. s.	M. s.	′ ″
11	Sun . .	. . .	1 4.06	15 59.64
18	Sun . .	— 1 3.99	. . .	16 1.65
46	Sun . .	— 1 3.99		

16, 35. Obs'd for Dec. at wire VII.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	H M. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Sept. 16	1	α Bootis	56.8	8.8	20.0	32.0	43.7	55.0	7.0	14 8 31.90	341 5 39.8	37.0	39.9	38.4	38.77	. .	30.160	70.0	70.2	M.
	2	α Ophiuchi	..	..	30.0	42.0	53.2	4.8	15.8	17 27 53.16	333 47 45.2	42.6	47.2	47.5	45.62	. .	30.090	67.9	66.4	
	3	γ Draconis	2.0	20.0	37.0	55.0	12.2	30.0	47.5	17 52 54.81	12 37 12.8	3.2	9.3	8.5	8.45	. .	30.092	66.8	65.9	
	4	α Lyræ	55.0	9.5	23.5	37.5	51.8	5.5	19.5	18 31 37.47	359 45 36.8	31.1	33.0	33.0	33.47	. .	30.096	67.2	63.9	
17	5	Sun, 1st & N. L. (Mic. 6)	..	..	8.2	19.2	30.2	40.9	52.3	11 37 30.16	323 27 55.0	52.0	57.2	53.5	54.42	40.113	30.076	68.5	73.1	
	6	Sun, 2d & S. L. (Mic. 2)	54.2	5.3	16.2	27.3	38.4	49.5	0.4	11 39 27.33	" " "	"	"	"	"	35.116				
	7	Polaris, S. P.							8.5		52 34 72.4	57.6	67.0	66.8	65.95	. .	30.054	69.5	72.4	
	8							3.5			35 25.5	11.0	18.8	19.9	78.80	. .				
	9						3.0					32.4	16.4	25.0	27.0	25.20	. .	30.052	70.0	72.9	
	10					59.0				13 5 0.23		33.2	18.9	26.3	28.5	26.72	. .			
	11				59.5							31.7	16.4	25.4	26.6	25.03	. .	30.050	69.8	72.6	
	12			52.0								25.9	10.9	20.4	20.4	19.40	. .			
	13		56.5									34 73.9	57.2	67.8	67.8	66.67	. .	30.048	70.0	72.4
	14	α Bootis	57.1	9.2	20.4	32.5	44.3	56.0	7.0	14 8 32.36	341 5 37.0	36.1	39.7	39.1	37.97	. .	30.040	70.3	72.4	
	†15	ε Bootis	..	..	..	..	..	34.5	46.7	14 38 40.60	348 49 58.8	54.9	56.8	56.7	56.80	. .	30.032	70.4	71.9	
	16	α Scorpii	17.9	30.1	42.1	54.8	6.2	19.3	31.1	16 19 54.50	295 3 5.5	4.2	9.8	8.1	6.90	. .	30.018	69.0	70.1	
	17	α Herculis	58.6	10.3	21.4	32.8	44.0	55.4	6.7	17 7 32.74	335 41 14.9	12.2	17.4	14.5	14.75	. .	30.010	70.0	69.4	
	18	α Ophiuchi	8.8	20.1	31.2	42.3	53.8	5.0	16.1	17 27 42.47	333 47 42.2	39.5	45.4	43.4	42.62	. .	30.008	70.0	68.8	
	19	γ Draconis	..	..	..	55.5	12.8	30.4	48.3	17 54 21.75	12 37 13.2	5.2	10.2	9.4	9.50	. .	30.016	69.6	67.8	
	20	μ^1 Sagittarii	54.4	6.3	18.2	30.0	41.4	53.4	5.0	18 4 29.82	300 2 33.1	30.9	37.0	36.1	34.27	. .	30.016	69.5	67.4	
	†21	δ Ursæ Minoris	..	21.0	25.0	31.5	35.2	41.5	..	18 21 30.84	. . . .	.	.	.	.	. .				
	†22	α Lyræ	56.0	10.4	24.2	38.0	52.2	6.8	20.4	18 31 38.22	359 45 35.8	31.4	33.8	32.3	33.32	. .	30.000	69.2	66.7	
	23	γ Ceti	44.0	55.0	5.6	16.4	27.0	38.2	49.5	2 35 16.53	323 42 32.4	32.8	37.1	36.0	34.57	. .	29.988	65.0	55.7	
	24	Mars, 1st & N. L.	20.1	32.2	43.2	54.2	5.3	16.2	28.1	2 53 54.19	334 43 23.4	25.8	25.3	26.8	25.32	. .	29.984	64.6	55.2	
	25	α Persei	31.0	48.2	5.0	22.2	38.5	55.4	12.3	3 13 21.80	10 24 57.0	45.9	59.6	54.5	52.50	. .	29.989	64.5	55.0	
18	26	Sun, 1st & N. L. (Mic. 6)	22.0	33.5	44.6	55.8	7.0	17.8	28.8	11 40 55.64	323 4 35.6	35.1	37.8	35.0	35.87d	40.114	29.964	67.0	70.7	
	27	Sun, 2d & S. L. (Mic. 2)	30.2	41.2	52.8	3.5	14.6	25.6	36.4	11 43 3.47	" " "	"	"	"	"	35.017	29.962	67.0	71.6	
20	†28	Moon, 1st L.	45.9	58.1	9.2	20.0	32.8	44.3	55.8	20 37 20.76	. . . .	.	.	.	.	. .				
21	†29	α Herculis	0.2	12.0	..	34.2	45.7	57.0	8.4	17 7 36.25	335 41 15.4	13.9	17.8	16.5	15.90	. .	29.976	66.0	66.2	
	30	α Ophiuchi	10.4	22.0	33.0	44.1	55.5	6.6	17.9	17 27 44.21	333 47 43.7	41.0	45.6	43.9	43.55	. .	29.994	66.0	65.5	
	31	γ Draconis	4.0	22.2	39.1	57.0	14.0	32.5	49.6	17 52 56.92	12 37 13.7	3.2	10.9	9.9	9.42d	. .	30.002	66.0	64.4	
	32	μ^1 Sagittarii	56.2	8.2	19.6	30.9	43.2	55.2	6.4	18 4 31.39	300 2 34.8	31.4	37.4	36.2	34.90	. .	30.002	66.0	63.4	
	33	δ Ursæ Minoris	14.5	22.0	25.0	31.5	34.5	..	..	18 18 25.50	. . . .	.	.	.	.	. .				
	34	51 (Hev.) Cephei, S. P.	..	..	..	59.0	12.5	22.5	..	18 23 11.33	. . . .	.	.	.	.	. .				
	35	α Lyræ	57.5	12.0	25.4	39.8	53.9	8.1	21.7	18 31 39.77	359 45 34.7	31.2	33.4	32.2	32.87	. .	30.002	65.7	61.5	
	36	β Lyræ	41.2	54.3	7.3	20.1	33.2	46.2	59.5	18 44 20.26	354 18 20.4	16.2	18.6	17.3	18.12	. .	30.002	65.7	61.4	
	37	γ Aquilæ	20.4	32.2	43.1	53.9	5.0	16.2	27.4	19 38 54.03	. . . .	.	.	.	.	. .				
	38	α Aquilæ	..	..	3.0	13.8	24.9	36.4	47.4	19 43 25.10	. . . .	.	.	.	.	. .				
	39	β Aquilæ	9.5	20.9	31.7	42.6	53.8	5.2	15.8	19 47 42.79	327 9 7.4	7.1	9.6	9.2	8.32	. .	30.032	64.2	58.2	
	†40	Polaris, (Mic. 7.)	38.0								. . . .	.	.	.	.	. .				
	41			43.0							49 13 37.5	27.7	31.7	33.6	32.62d	42.418	30.084	63.4	55.3	
	42				36.0							"	"	"	"	42.115				
	†43					36.0				1 5 33.98		"	"	"	"	42.052				
	44						29.5					"	"	"	"	42.139				
	45							28.0				"	"	"	"	42.304				
	46								27.0			"	"	"	"	42.734	30.086	62.7	54.7	
22	†47	Sun, 1st & N. L. (Mic. 6)	45.4	57.2	7.4	18.5	30.4	40.6	51.2	11 55 18.67	321 31 20.8	19.6	24.3	24.5	22.30	40.119	30.180	67.5	68.8	
	†48	Sun, 2d & S. L. (Mic. 2)	54.0	4.4	15.8	26.7	37.9	49.0	59.7	11 57 26.79	" " "	"	"	"	"	35.015	"	"	"	
	49	Venus, 1st & N. L.	..	13.2	24.2	35.4	47.2	58.3	9.2	12 44 41.24	307 20 54.9	56.4	60.4	58.8	57.62	. .	30.176	68.1	69.8	
	50	Venus, S. L. (Mic.)	..	..	..	..	..	..	..		" " "	"	"	"	"	38.762				
	51	α Bootis	59.5	11.2	23.1	34.1	46.2	58.2	9.5	14 8 34.54	341 5 37.5	35.3	39.0	38.8	37.65	. .	30.158	69.0	69.6	
	52	δ Ursæ Minoris	17.5								47 41 47.5	37.7	41.0	41.8	42.00	. .	. .	.	64.5	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	c.	Error of Runs.	Mic. coin. At	
	h. s.	s.	s.	s.	″	h.	revs.
Sept. 17, 18	s 10.09	g 0.630	—0.142	—0.437		12	40.113
" 3	9.67				— .41	20	.115
18, .	. .	.020			— .65	12	.114
20, .	. .	.024				21	.119
21, 19	8.34	.028			— .45	23	.112
22, 19	7.53	.030			— .82	12	.119

1 rev. = 34″.406

40. Transit recorded 48s.

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.			R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mea
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					°
+ 10.76	— 0 0.52	— 0 0.06	— 0 19.27	341 5 19.44	2.74	14 8 42.14	+ 19 58 55.95	+ 7.28	—58.56	Sept.	17,	1h.	(M.)	180
10.64	11.70	— .05	— 27.83	333 47 17.74	. .	17 27 52.19	— 12 40 54.25	6.22	27.22	5′′6	3′′0	5′′1	2′′0	3′′9
10.63	0.89	+ .22	+ 12.68	12 37 21.35	. .	17 53 4.55	+ 51 30 57.86	2.93	29.73	5.2	3.2	4.2	1.4	3.5
10.62	.68	.10	— 0.24	359 45 33.36	. .	18 31 47.41	+ 38 39 9.84	+ 4.04	19.34	5.5	3.4	4.8	1.7	3.5
10.28	11.44	+14 28.31	35.94	323 41 46.79	2.35	11 38 33.08	+ 2 19 23.03			5.6	3.1	4.6	2.1	3.8
10.28	— 0.45	—17 32.16	— 36.68	323 9 45.58						5.7	3.3	4.8	2.3	4.0
										5.52	3.20	4.70	1.90	3.8
. .	. .	+ 0 21.46	+ 1 12.85	52 36 40.26										
. .	. .	9.72	1 12.81	41.33										
. .	. .	+ 2.63	1 12.79	40.62										
10.24	+ 22.05	— 0.07	1 12.81	39.46	. .	13 5 32.52	+ 88 29 42.43	— 27.03	+52.27					
. .	. .	+ 2.23	1 12.83	40.09										
. .	. .	9.35	1 12.83	41.58										
. .	. .	+ 21.82	+ 1 12.83	41.32										
10.21	— 0.52	— 0.05	— 0 19.11	341 5 18.81	. .	14 8 42.05	+ 19 58 55.71	+ 7.29	—58.45					
10.19	31.49	+ 1.99	11.03	348 49 46.03	. .	14 38 19.40	+ 27 43 24.66	7.04	53.33					
10.14	.42	+ 0.01	1 59.19	295 1 7.72	3.09	16 20 4.32	— 26 5 16.12	8.47	26.15					
10.12	.49	— .10	0 25.33	335 40 49.32	. .	17 7 42.37	+ 14 34 25.48	6.26	30.87	Sept.	18,	12h.	(M.)	180
10.10	.48	— .04	27.62	333 47 14.96	. .	17 27 52.09	+ 12 40 51.12	6.24	27.23	4.0	1.4	2.9	1.9	2.5
10.10	27.29	+ .16	— 12.59	12 37 22.25	. .	17 53 4.56	+ 51 30 58.41	2.97	29.75	3.9	1.5	2.4	1.0	2.2
10.09	0.41	— .06	1 37.00	300 0 57.21	. .	18 4 39.50	— 21 5 26.63	+ 7.81	8.55	3.5	1.3	2.0	1.0	1.9
10.08	10.04	. .	. . .	. . . .	. .	18 21 30.88	. . . .	— 47.94		4.2	1.2	2.2	1.1	2.1
										4.0	1.3	2.1	1.1	2.1
10.08	0.68	+ .07	0 0.25	359 45 33.14	. .	18 31 47.62	+ 38 38 9.30	+ 4.06	—19.41	3.92	1.34	2.32	1.22	2.2
9.68	.45	.08	42.23	323 41 52.42	3.83	2 35 25.76	+ 2 35 27.84	5.98	+32.28					
9.67	.49	.19	28.68	334 42 56.83	. .	2 54 3.94	+ 13 36 32.25							
9.66	.84	.12	10.59	10 25 3.21	. .	3 13 30.62	+ 49 18 38.63	7.84	+42.21					
9.49	.45	+14 28.21	36.51	323 18 27.57	2.20	11 42 8.59	+ 1 56 2.33							
		—17 35.69	37.19	322 46 22.99										
8.97	.42	. .	. . .	. . . .	. .	20 38 38.60								
8.39	2.38	0 0.11	25.47	335 40 50.32	4.58	17 7 42.26	+ 14 34 24.99	6.34	—30.81					
8.38	0.48	.04	— 27.80	333 47 15.71	. .	17 27 52.11	+ 12 40 50.38	6.31	27.22					
8.37	.89	+ .05	+ 12.67	12 37 22.14	. .	17 53 4.40	+ 51 30 56.81	3.11	29.79					
8.36	— .41	— .06	— 1 37.73	300 0 57.11	. .	18 4 39.34	— 21 5 28.22	+ 7.88	8.55	Sept.	21,	0h.	(M.)	180
8.36	+ 2 55.16	+ . .	. . .	. . . .	. .	18 21 29.02	. . . .	— 46.17		6.3	3.8	4.7	2.8	4.4
8.35	+ 4 0.56	— . .	. . .	. . . .	. .	18 27 20.24	. . . .	+ 73.28		5.9	3.7	3.8	3.2	4.1
8.35	— 0 0.68	+ .08	0 0.24	359 45 32.71	. .	18 31 47.44	+ 38 39 7 38	4.17	19.62	6.5	4.4	4.5	3.8	4.5
8.34	.62	.04	5.68	354 18 12.48	. .	18 44 27.98	+ 33 11 47.15	4.50	—16.73	6.6	4.9	4.5	3.7	4.9
8.32	.47	. .	. . .	. . . .	. .	19 39 1.88	. . . .	5.72		6.33	4.20	4.37	3.37	4.6
8.32	11.53	. .	. . .	. . . .	. .	19 43 21.89	. . . .	5.87						
8.31	0.46	.02	— 37.02	327 8 31.32	. .	19 47 50.64	+ 6 2 5.99	5.91	+ 1.64					
. .	. .	. .	. . .	. . . .										
. .	. .	31.68	+ 1 7.74	49 36 12.04										
. .	. .	28.53	1 7.74	8.89										
8.17	22.06	28.67	1 7.74	9.03	. .	1 5 30.09	+ 88 29 44.14	— 28.30	+50.66					
. .	. .	29.08	1 7.79	9.49										
. .	. .	27.11	1 7.83	7.56										
. .	. .	29.31	+ 1 7.84	9.77						Sept.	22,	12h.3	(M.)	180
7.74	0.44	+14 28.15	— 0 39.20	321 45 11.25	1.66	11 56 30.02	+ 0 22 46.37			4.2	1.5	2.6	0.7	2.2
		—17 36.00	39.99	321 13 6.31						3.5	0.7	1.8	0.1	1.5
										4.6	1.4	2.5	1.0	2.3
7.71	6.07	0.01	50.86	207 20 6.75	. .	12 44 44.79	— 13 46 44.81			4.3	0.7	1.9	0.2	1.7
		48.89	1 0.31	307 19 8.42						4.0	0.4	2.0	0.0	1.6
+ 7.67	— 0.52	0.10	— 0 19.30	341 5 18.25	. .	14 8 41.69	+ 19 58 55.84	+ 7.34	—57.83	4.10	0.94	2.16	0.40	1.9
		— 8.55	+ 1 2.38	47 42 35.83										

Object.	COR. IN R.	Observed Semi-diam.	
	Semi-Diam.	Hor.	Vert.
	m. s.	m. s.	′ ″
Sun . .	. . .	1 4.08	16 0.60
Mars .	— 0 0.57		
Sun . .	. . .	1 3.91	16 2.29
Moon .	1 9.29		
Sun . .	. . .	1 4.06	16 2.47
Venus .	0 1.90	. . .	0 29.16

15. Very faint. Observed for Dec. at 14h. 39m. 5s.
29. Very faint. Observed by daylight.
43. Unsteady,
47, 48. Observer disturbed by conversation in the room.
50. —9″.45 applied for defective illumination.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean	Mic.	Barometer.	THER'S At.	THER'S Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	H. M. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Sept.22	1			23.5							47 41 43.0	32.2	36.4	39.0	37.65	. .				M.
	2				25.5							40.0	26.5	33.2	35.2	33.72	. .	30.154	68.0	63.4	
	3	δ Ursæ Minoris . . .				33.0				18 21 31.71		38.2	25.4	29.9	33.0	31.62	. .				
	4						36.0					38.5	25.2	31.0	34.4	32.27	. .				
	5							41.0				41.4	29.4	35.0	37.2	35.75	. .				
	6								45.5			43.4	31.9	39.4	40.4	38.77	. .	. .	.	63.2	
	7	β Lyra	42.0	55.1	..	21.2	34.2	47.4	0.0	18 44 23.32	354 18 15.2	11.5	15.0	14.4	14.02	. .	30.164	67.5	61.8	
	†8	ζ Aquilæ	44.1	55.4	6.8	18.0	29.5	40.6	51.5	18 58 17.99	334 45 40.9	40.2	41.5	42.0	41.15	. .	30.160	67.2	60.9	
26	9	ε Pegasi	4.9	16.1	27.0	38.3	49.0	1.0	11.8	21 36 38.30	330 17 58.2	56.0	59.3	57.8	57.82	. .	29.978	65.0	58.8	
	10	Weisse XXI, 1398 .	46.5	58.4	9.5	20.9	31.9	43.1	54.2	22 0 20.64	. . .	.	.	.	. .	. .				
	†11	NEPTUNE	..	..	..	..	..	..	21.2	22 2 21.20	308 24 52.5	59.8	56.5	54.0	55.70	. .	29.974	64.2	57.4	
	12	ζ Pegasi	15.5	26.4	37.4	49.2	59.7	10.3	22.0	22 33 48.64	331 9 29.2	27.4	30.5	29.3	29.10	. .	29.974	64.0	56.7	
	13	α Piscis Australis . .	30.9	43.8	56.4	9.4	21.9	34.6	47.3	22 49 9.19	290 43 20.8	17.6	24.1	22.3	21.20d	. .	29.976	63.8	55.7	
	†14	α Pegasi	32.3	43.9	55.3	7.2	18.5	29.4	40.7	22 57 6.76	335 30 18.5	19.4	19.5	19.6	19.25	. .	29.974	63.5	55.6	
	15	α Andromedæ . . .	51.1	4.2	16.0	28.3	40.8	53.5	5.6	0 0 28.50	349 21 45.0	43.8	46.0	45.7	45.12	. .	29.976	63.5	55.1	
	16	γ Pegasi	46.2	58.0	9.2	21.0	32.2	43.0	54.1	0 5 20.53	335 27 14.7	12.6	16.4	15.7	14.85	. .	29.976	63.5	55.2	
	17	α Cassiopeiæ	54.2	14.0	33.2	52.2	12.3	31.3	51.0	0 31 52.60	16 48 18.9	11.0	16.2	16.1	15.55	. .	29.972	63.2	54.9	
	†18	β Ceti	..	..	41.0	51.9	4.0	15.2	27.0	0 36 3.82	302 18 39.9	36.9	42.8	40.8	40.10	. .	29.972	63.2	54.9	
	19	Polaris			50.5						49 34 68.7	55.4	63.2	64.0	62.82	. .	29.968	62.2	54.3	
	20					49.5				1 2 20.00		65.9	52.0	61.4	61.5	60.20	. .	. .	.	54.5	
27	21	α Lyræ	0.5	14.5	28.5	..	57.0	11.2	25.0	18 31 42.78	359 45 32.9	29.6	32.0	31.2	31.42	. .	29.824	66.7	66.7	Mu.
	22	β Lyræ	44.2	58.5	10.6	24.0	37.4	50.2	3.2	18 44 24.01	354 18 15.5	11.8	14.9	15.2	14.35	. .	29.828	66.9	66.7	
	23	γ Aquilæ	24.2	35.5	46.2	58.0	8.5	19.8	30.8	19 38 57.57	331 22 1.6	0.3	1.7	1.5	1.27	. .	29.830	66.9	64.1	
	24	α^2 Capricorni	58.5	9.8	21.0	32.2	43.9	55.0	6.0	20 9 32.34	308 7 2.1	3.2	8.7	7.8	5.45	. .	29.820	66.5	63.0	
	25	ε Pegasi	6.0	17.2	28.2	40.0	..	2.0	13.0	21 36 37.73	330 17 53.0	52.2	55.2	54.1	53.62	. .	29.812	65.6	63.2	
28	†26	ε Pegasi	6.5	17.8	28.4	39.8	51.0	2.1	13.0	21 36 39.87	330 17 55.9	61.4	55.3	61.3	58.47	. .	29.834	66.0	60.2	M.
	†27	SATURN, 1st L. . .	43.2	54.1	6.1	16.2	..	39.2	50.2	22 40 14.83	. . .	.	.	.	. .	. .				
	28	α Piscis Australis . .	32.2	45.5	58.2	10.2	23.4	36.0	48.4	22 49 10.56	. . .	.	.	.	. .	. .				
29	29	SUN, 1st & N. L. (Mic.6)	2.5	13.8	24.7	35.1	46.3	57.2	8.0	12 20 35.37	318 47 42.0	37.9	36.9	44.0	40.20	40.126	29.916	65.2	64.1	
	30	SUN, 2d & S. L. (Mic.2)	11.0	21.8	33.0	43.9	55.0	5.9	16.7	12 22 43.90		"	"	"	"	34.886	29.910	65.2	64.8	
	31	α Bootis	4.1	16.0	27.4	39.1	50.7	2.2	14.0	14 8 39.07	341 5 32.5	34.1	29.2	37.2	33.25	. .	29.890	66.0	66.3	
	32	α Ophiuchi	15.5	27.0	38.1	49.0	0.2	12.0	23.0	17 21 49.26	333 47 40.5	40.1	37.2	42.9	40.17	. .	29.868	67.0	64.0	
	33	γ Draconis	9.1	27.0	44.2	2.3	19.5	37.4	55.0	17 53 2.08	12 37 8.9	3.5	2.7	8.9	6.00	. .	29.864	66.5	61.3	
	†34	α Lyræ	2.5	17.1	30.0	45.0	59.1	13.0	27.2	18 31 45.02	359 45 30.9	29.1	25.3	30.4	28.92	. .	29.860	65.8	59.3	
	†35	β Lyræ	46.0	59.5	12.7	25.6	38.2	51.7	4.8	18 44 25.50	354 18 15.0	13.8	9.1	15.1	13.25	. .	29.860	65.6	58.3	
	36	ζ Aquilæ	48.4	0.0	11.2	22.5	33.4	44.3	56.1	18 58 22.27	334 45 34.2	38.4	32.5	40.2	36.32	. .	29.859	65.4	57.8	
	37	δ Aquilæ	13.8	25.5	36.0	47.0	58.2	9.1	20.0	19 17 47.09	323 56 12.0	15.5	11.4	18.4	14.32	. .	29.858	65.0	56.9	
	38	Anonymous . (Mic.)	..	31.2	..	54.0	5.2	..	..	19 48 50.13	306 40 30.7	32.5	31.1	37.4	32.94d	42.890	29.868	64.5	55.3	
	39	Weisse XIX, 1259(")	..	..	..	..	..	..	..	. . . .		"	"	"	"	44.292	"	"	"	
	40	Weisse XIX, 1319(" 5)	57.2	8.8	20.2	31.5	42.4	54.0	5.6	19 52 31.39		"	"	"	"	40.557	"	"	"	
	†41	ζ Cygni	48.4	1.2	14.0	26.8	39.0	51.7	4.0	21 6 26.44	350 43 6.7	8.9	5.1	13.0	8.42	. .	29.876	62.8	55.0	
	42	β Aquarii	57.2	9.0	20.0	30.9	41.8	53.0	3.8	21 23 30.81	314 53 13.2	13.8	12.2	17.4	14.15	. .	29.878	62.2	54.7	
30	43	SUN, 1st & N. L. . .	40.4	51.9	3.0	14.0	24.8	36.0	47.1	12 24 13.89	. . .	.	.	.	. .	. .				
	44	SUN, 2d & S. L. . .	49.4	0.0	11.0	22.7	33.3	44.8	55.2	12 26 22.34	. . .	.	.	.	. .	. .				
Oct. 1	45	β Lyræ	49.0	2.5	15.0	28.3	41.2	54.3	7.8	18 44 28.37	354 18 16.9	14.9	12.0	20.4	16.05	. .	29.854	71.5	71.0	Mu.
	46	α Cygni	31.2	46.5	2.0	17.2	32.3	47.8	3.0	20 36 17.14	5 50 60.1	55.6	54.3	62.4	58.10	29.870	29.870	70.0	66.8	
	47	ζ Cygni	50.5	4.3	17.5	29.5	42.3	54.5	7.2	21 6 29.40	350 43 3.9	4.3	1.0	7.6	4.20	. .	29.874	69.5	65.9	
	48	β Aquarii	0.5	11.5	22.8	34.0	45.0	55.8	6.8	21 23 33.77	314 53 5.8	7.6	7.8	6.6	6.95	. .	29.876	69.0	65.9	
4	†49			2.0							49 35 26.9	19.9	20.2	28.9	23.97	. .	. .	.	46.6	
	50				56.0						34 67.9	55.6	61.0	68.1	63.15	. .	30.030	55.5	46.6	
	51	Polaris				7.5				1 9 31.42		64.9	55.2	58.6	65.6	60.50	. .			
	52						1.0					65.2	53.9	58.0	61.6	60.92	. .	30.030	55.1	46.5	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	
h.	s.	s.	s.	s.	″	h.	revs.
Sept. 26, 23	s 5.72	g 0.030	—0.142	—0.437	—0.66		
27, 20	4.71	.036			—0.25		
28, 22	4.37	.043					
29, 19	2.96	.048			—0.04	13	40.125
30	s . .	.050				13	.128
Oct. 1, 20	f 0.20	.050			—0.31	19	.113
4, 3	2.52	.050					

1 rev. = 34″.406

ASSUMED LATITUDE 38° 53′ 39″.25 NORTH.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					°
. .	. .	— 0 4.25	+ 1 2.43	47 42 35.83	. .									
. .	. .	1.12	1 2.47	35.07	. .					Sept.	26,	Night.	(M.)	180 0
- 7.55	— 0 9.76	0.13	1 2.50	33.97	61.91	18 21 29.50	+ 86 36 11.43	— 45.76	—23.50	4′/5	1′/9	3′/9	2′/8	3′/27
. .	. .	1.35	1 2.52	33.44	. .					5.2	2.3	3.9	2.8	3.55
. .	. .	4.75	1 2.53	33.53	. .					5.4	2.4	4.2	3.0	3.75
. .	. .	— 10.34	+ 1 2.53	30.96	. .					5.4	2.4	4.1	3.1	3.75
										5.5	2.0	3.8	2.1	3.35
+ 7.53	— 2.80	+ 0.06	— 0 5.71	354 18 8.37	. .	18 44 28.05	+ 33 11 45.71	+ 4.52	16.78	5.20	2.20	3.98	2.76	3.54
7.52	0.48	+ .19	27.00	334 45 14.34	. .	18 58 25.03	+ 13 38 51.68	5.72	— 9.45					
5.76	.47	— .01	32.61	330 17 25.20	63.55	21 36 43.59	+ 9 11 0.90	5.46	+21.02					
5.75	.42	. .	. .	. . . .	. .	22 0 25.97	. . . .	5.28						
5.75	4.11	+ .55	1 11.92	308 23 44.31	. .	22 1 52.84	— 12 42 39.99							
5.74	0.47	+ .11	0 31.61	331 8 57.60	. .	22 33 53.91	+ 10 2 33.30	5.36	28.73	Sept.	27,		(Mu.)	180 0
5.73	.42	— .03	2 30.81	290 40 50.36	. .	22 49 14.50	— 30 25 33.94	6.34	35.74	4.7	2.5	3.9	3.0	3.53
5.72	.49	+ .07	0 26.21	335 29 53.11	. .	22 57 11.99	+ 14 23 28.81	5.23	30.91	4.8	1.3	3.6	2.9	3.15
5.69	.58	.16	10.82	349 21 34.45	. .	0 0 33.61	+ 28 15 10.16	5.08	36.31	5.0	1.6	3.5	2.8	3.22
5.69	.49	.05	— 26.30	335 26 48.60	. .	0 5 25.73	+ 14 20 24.30	5.37	36.44	4.7	1.6	3.3	2.8	3.10
5.68	1.00	.06	+ 17.40	16 48 33.01	. .	0 31 57.28	+ 55 42 8.69	4.35	41.59	4.7	1.7	3.6	3.1	3.28
5.67	— 11.98	+ .48	— 1 30.85	302 17 9.73	. .	0 35 57.51	— 18 49 14.57	+ 5.53	36.97	4.78	1.74	3.58	2.92	3.26
		— 2.44	+ 1 7.62	49 36 8.00	. .	1 5 32.01	+ 88 29 43.48	— 29.52	+48.83					
5.66	+ 3 6.35	— 0.23	+ 1 7.59	7.56										
4.76	— 0 0.67	+ .04	— 0 0.24	359 45 31.22	63.25	18 31 46.87	+ 38 39 7.22	+ 4.33	—19.81					
4.76	.62	.02	5.59	354 18 8.76	. .	18 44 28.15	+ 33 11 44.78	4.33	16.96	Sept.	26,	12h.7	(M.)	1795
4.72	.47	.00	30.74	331 21 30.53	. .	19 39 1.82	+ 10 15 6.53	5.82	— 0.38	58.0	57.2	51.2	58.5	56.23
4.71	— .42	+ .09	1 11.77	308 5 53.77	. .	20 9 36.59	— 13 0 30.23	6.83	+12.29	58.5	57.7	52.2	58.5	56.72
										58.7	58.0	51.6	58.6	56.73
4.65	+ 1.38	— .01	0 32.16	330 17 21.45	. .	21 36 43.76	+ 9 10 57.45	5.47	20.95	60.7	59.7	53.8	60.3	58.62
4.39	— 0.47	. .	32.38	. . . .	. .	21 36 43.79	+ 9 11 1.41	5.48	+20.90	59.0	59.1	52.1	59.1	57.33
4.34	+ 1.38	. .	. .	. . . .	. .	22 40 21.18				58.98	58.34	52.18	59.00	57.13
4.34	— 0.42	. .	. .	. . . .	. .	22 49 14.48	. . . .	6.35						
		+14 28.19	43.41	319 1 24.98	57.12	12 21 42.48	— 2 20 57.68							
3.29	.44	—17 40.60	44.20	318 29 15.40										
3.20	.52	0 0.00	19.25	341 5 14.00	. .	14 8 41.75	+ 19 58 56.13	7.40	—56.86	Sept.	29,	Night.	(M.)	1795
3.04	.48	.00	— 27.75	333 47 12.42	. .	17 27 51.82	+ 12 50 54.55	6.47	27.06	62.5	62.2	56.0	64.0	61.18
3.02	.89	+ .01	+ 12.69	12 37 18.70	. .	17 53 4.21	+ 51 31 0.83	3.39	29.63	62.5	61.2	56.2	62.5	60.60
2.99	.68	.01	— 0.25	359 45 28.68	60.59	18 31 47.33	+ 38 39 7.34	4.38	19.83	61.8	62.2	56.1	62.9	60.75
2.98	.62	.00	5.69	354 18 7.56	. .	18 44 27.86	+ 33 11 46.22	4.69	17.00	61.8	62.0	56.0	61.0	60.20
2.96	.48	+ .01	26.89	334 45 9.44	. .	18 58 24.75	+ 13 38 48.16	5.86	— 9.60	61.4	61.9	56.5	61.1	60.23
2.95	— .45	— .01	41.60	323 55 32.71	. .	19 17 49.59	+ 2 49 11.37	6.38	— 2.13	62.00	61.90	56.16	62.30	60.59
2.93	+ 3.32	+ 1 35.12	1 16.80	306 42 8.06	. .	19 48 56.38	— 14 25 30.08	7.06	+ 9.26					
. .	. .	2 23.33	1 16 75	306 41 39.52	. .	19 49 . .	— 14 24 41.82	7.03	9.90					
2.93	— 0.42	6 1.42	1 16.58	306 45 17.78	. .	19 52 33.90	— 14 21 3.56	7.24	10.11					
2.86	.59	+ 0 0.01	0 9.38	350 42 59.05	. .	21 6 28.71	+ 29 36 37.71	4.46	11.90	Sept.	30,		(M.)	1795
2.85	.43	— .01	57.62	314 52 16.52	. .	21 23 33.23	— 6 14 4.82	6.15	+22.37	62.4	61.8	56.9	62.4	60.88
+ 1.84	.43	. .	. .	. . . .	. .	12 25 19.52				61.6	61.1	56.1	62.3	60.27
— 0.14	.62	+ .04	— 5.55	354 18 10.54	60.78	18 44 27.61	+ 33 11 49.01	4.74	—17.03	61.8	61.9	56.9	62.0	60.65
.23	.77	.10	+ 5.75	5 51 3.95	. .	20 36 16.14	+ 44 44 43.21	3.25	+ 3.95	61.7	61.4	56.9	61.8	60.45
.25	.59	+ .11	— 9.18	350 42 55.13	. .	21 6 28.56	+ 29 36 33.60	4.49	11.66	62.1	61.5	56.3	61.8	60.43
.27	.43	— .09	— 56.36	314 52 10.50	. .	21 23 33.07	— 6 14 11.03	+ 6.18	22.40	61.92	61.54	56.62	62.06	60.54
. .	. .	22.13	+ 1 8.81	49 36 10.65	. .									
. .	. .	2.39	1 8.81	9.57	. .									
— 2.43	. .	0.11	1 8.79	9.18	. .	1 5 37.42	+ 88 29 47.88	— 31.16	+45.84	Oct.	1,		(Mu.)	1795
. .	— 3 51.57	— 0 2.99	+ 1 8.80	6.73						61.8	61.5	57.8	62.7	60.95
										60.2	60.7	59.8	62.1	60.70
										61.3	60.2	58.2	63.0	60.68
										61.8	63.2	57.7	63.5	61.55
										59.9	61.9	56.0	62.4	60.05
										61.00	61.50	57.90	62.74	60.79

Object.	COR IN R.	Observed Semi-Diam.	
	Semi-Diam.	Hor.	Vert.
	m. s.	m. s.	′ ″
Saturn .	+ 0 0.63		
Sun . .	. . . .	1 4.26	16 4.79
Sun . .	. . . .	1 4.22	

8, 26, 41. Obs'd with full aperture.
11. Obs'd for dec. at 22h. 2m. 40s.
18. " " " 0 26 38
27, 35. Very unsteady.
49. Obs'n for dec. is supposed to have been made at vertical wire I, or 7m. 10s. before the transit of II.

Oct.	4,		(Mu.)	1795	
60.2	61.5	54.9	61.2	59.45	
59.2	60.4	54.2	60.7	58.62	
61.0	60.8	54.5	61.1	59.35	
60.6	60.0	54.9	60.6	59.03	
60.2	60.4	53.3	60.5	58.60	
60.24	60.62	54.36	60.82	59.02	

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Oct. 4	1	Polaris						3.0			49 35 12.4	1.4	5.1	12.8	7.93	. .				Mu.
	2								59.0		35 24.3	11.2	15.6	24.5	18.90	. .	30.026	54.8	46.5	
	3	γ Ceti	56.2	7.5	18.5	29.0	..	51.0	2.0	2 35 27.37	323 42 36.5	38.3	36.0	42.5	38.325	. .	30.024	53.8	46.0	
11	4	Weisse XIX, 1319	8.0	19.0	30.0	41.5	52.5	3.5	15.0	19 53 41.57	. . . .	.	.	.	. . .	. .				
	5	Anonymous	..	..	..	54.0	..	17.0	28.0	20 3 13.00	306 53 7.0	9.4	9.9	16.0	10.57	. .	30.082	62.6	52.9	
	6	α Cygni	38.0	53.5	8.8	25.0	39.5	55.0	10.7	20 36 24.37	. . . .	.	.	.	. . .	. .	30.084	61.0	50.4	
	7	61[1] Cygni	32.5	46.5	0.5	14.5	..	42.0	56.0	21 0 12.00	. . . .	.	.	.	. . .	. .	30.092	59.5	49.4	
	8	ε Pegasi	18.0	29.2	40.5	..	2.5	13.0	25.0	21 36 51.37	330 17 57.4	60.0	57.6	63.1	59.52	. .	30.102	58.5	48.0	
	9	Neptune	24.5	35.0	46.8	57.5	8.5	20.0	31.5	22 0 57.69	308 19 19.0	20.0	20.1	25.8	21.22[d]	. .	30.104	57.6	48.0	
	10	α Lyræ	16.3	30.4	44.5	58.2	12.2	26.3	40.4	18 31 58.33	359 45 29.4	28.9	28.9	30.7	29.47	. .	29.998	54.5	49.3	M.
14	11	α Cephei	1.0	24.4	47.5	11.2	34.3	57.6	20.8	21 15 10.97	23 2 55.6	49.2	52.8	57.2	53.70	. .	29.998	51.5	45.4	
	12	β Cephei	20.7	53.0	24.6	56.5	28.1	0.2	32.0	21 26 56.45	30 59 50.2	40.7	45.4	49.0	46.32	. .	29.990	51.2	45.4	
	13	ε Pegasi	21.4	32.8	43.4	55.0	5.9	16.9	28.0	21 36 54.77	330 17 58.8	61.7	63.2	65.0	62.17	. .	29.992	51.1	44.8	
	14	α Aquarii	37.0	47.9	59.0	10.0	21.0	32.0	43.0	21 58 10.01	320 3 56.4	59.5	63.0	62.4	60.32	. .	30.010	50.8	44.3	
	15	ζ Pegasi	31.0	42.2	53.2	5.0	16.2	27.2	38.0	22 34 4.69	. . . .	.	.	.	. . .	. .				
	16	Saturn, 1st & N. L.	..	55.0	6.0	16.9	28.2	39.2	50.4	22 37 27.62	310 13 8.6	9.8	13.5	13.6	11.39	. .	30.024	50.0	43.8	
	17	Saturn, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	" " "	"	"	"	"	39.623	"	"	"	
	†18	α Pegasi	49.3	1.3	12.2	23.5	35.0	46.0	57.6	22 57 23.56	335 30 15.4	19.0	19.8	20.0	18.55	. .	30.026	49.8	42.8	
	19	α Andromedæ	8.0	20.0	32.7	45.0	57.0	10.0	23.0	0 0 45.10	349 21 44.4	44.5	44.5	46.6	45.00	. .	30.056	50.4	41.0	
	20	γ Pegasi	..	14.1	25.5	37.0	48.4	0.1	11.0	0 5 42.68	335 27 10.7	11.9	14.1	16.9	13.40	. .	30.056	50.2	41.0	
	21	α Cassiopeiæ	11.1	30.5	50.0	9.8	29.2	48.4	8.0	0 32 9.57	16 48 20.0	18.4	14.9	20.8	18.52	. .	30.054	49.5	40.2	
	22		10.5								49 35 29.7	21.2	26.1	30.5	26.87	. .	30.054	49.1	40.8	
	23			20.5							18.1	8.5	13.1	17.0	14.17	. .				
	24				13.0						11.4	1.7	8.8	12.3	8.55	. .				
	25	Polaris				12.0				1 5 1.67	11.0	0.1	8.0	11.1	7.55	. .	30.056	48.5	40.3	
	†26										13.4	3.7	10.9	13.9	10.47	. .				
	27							6.5			20.0	10.0	15.8	20.5	16.57	. .				
	28								7.5		30.4	20.9	27.4	31.1	27.45	. .	30.060	48.0	40.2	
	†29	α Arietis	14.0	26.0	37.4	49.8	1.5	13.6	25.2	1 58 49.64	343 51 7.8	6.8	7.9	10.0	8.12	. .	30.066	47.5	38.9	
	30	γ Ceti	5.0	16.0	27.1	38.0	48.9	0.2	11.0	2 35 38.03	323 42 33.5	35.7	38.8	40.5	37.12	. .	30.062	46.8	38.3	
	31	Mars, 1st & N. L.	50.2	2.3	13.2	24.2	35.4	46.6	57.2	2 43 24.16	334 49 43.7	47.7	49.2	52.0	48.16[d]	. .	30.062	46.9	38.9	
	32	Mars, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	" " "	"	"	"	"	39.505	"	"	"	
	†33	α Ceti	59.5	10.8	21.2	32.1	43.4	54.5	5.7	2 54 32.46	324 36 21.8	27.6	29.8	30.7	27.47	. .	30.062	46.1	38.8	
	34	α Persei	53.0	9.9	26.5	43.8	0.0	17.4	34.0	3 13 43.51	10 24 56.4	52.5	54.5	59.9	55.82	. .	30.072	46.0	38.6	
	†35	Venus, 2d & N. L.	57.0	7.6	19.0	30.0	40.7	52.0	3.1	12 3 29.91	314 10 50.0	50.7	55.0	57.4	53.27	. .	30.248	48.2	47.0	
	36	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	" " "	"	"	"	"	38.395	"	"	"	
	37								29.0		52 34 57.5	41.9	52.4	56.5	52.07	. .	30.244	49.2	47.9	
	38							28.5			34 69.8	55.9	65.4	68.7	64.95	. .				
	39						28.0				35 15.9	4.2	12.4	14.9	11.85	. .				
	†40	Polaris, S. P.								13 0 13.25	35 16.1	3.8	12.9	14.3	11.77	. .	30.244	49.5	48.5	
	†41										35 15.5	2.5	12.0	14.1	11.02	. .				
	†42										34 61.5	47.4	57.5	60.4	56.70	. .				
	43		27.5								34 54.5	40.0	49.2	52.8	49.12	. .	30.244	50.0	48.4	
	†44	α Bootis	19.2	31.0	42.0	54.3	6.1	17.4	..	14 8 48.33	341 5 31.2	31.1	31.9	39.0	33.30	. .	30.224	50.9	50.7	
15	†45	Mercury, Center	28.0	39.5	50.4	1.3	13.8	..	36.4	14 23 58.23	305 36 15.1	13.7	18.5	21.2	17.12	. .	30.210	51.3	50.4	
	46	α Lyræ	17.4	32.0	45.8	0.0	14.0	28.1	41.9	18 32 59.89	359 45 33.0	29.1	30.4	31.9	31.10	. .	30.244	51.7	47.5	
	47	β Lyræ	1.0	13.9	27.0	40.1	53.2	6.3	19.4	18 44 40.13	354 18 13.8	13.6	14.6	16.7	14.67	. .	30.246	51.3	46.7	
	48	ζ Aquilæ	3.5	15.2	26.2	38.0	48.9	0.0	11.3	18 58 37.59	334 45 37.2	39.8	39.4	42.7	39.77	. .	30.244	51.1	46.0	
	49	δ Aquilæ	29.2	40.0	51.0	2.2	12.9	23.9	35.0	19 18 2.03	323 56 15.8	18.7	20.1	22.5	19.27	. .	30.248	50.8	45.0	
	†50	Venus, 2d & N. L.	3.5	14.7	24.9	36.0	47.9	59.1	10.0	12 2 36.59	314 31 31.9	31.5	35.2	37.1	33.95[d]	. .	30.390	47.5	48.4	
	51	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	" " "	"	"	"	"	38.469	"	"	"	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.	1 rev. = 34″.406
h.	s.	s.	s.	s.	″	h.	revs.	
Oct. 11, 21	f 7.83	g 0.060	—0.142	—0.437	+0.22			34. Wire IV recorded 37s.0
14, 22	10.89	.065			— .08	18	40.126	50. Wire I recorded 28s.2
" 1	11.16					12	.129	
15, 19	12.41	.055	—0.286	—0.293	— .25	12	.124	

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					°
. .	. .	— 0 10.95	+ 1 8.80	49 36 5.78	. .						Oct. 11		(Mu.)	179
. .	. .	— 23.79	+ 1 8.81	3.92	. .									
. .	+ 0 1.38	+ 0.07	— 0 43.13	323 41 55.26	59.01		+ 2 35 35.59	+ 5.68	+31.83	62′.5	63′.9	58′.4	62′.2	61′.7
— 7.76	— 0.42	. .	. .	. . . .	. .	19 53 33.39	. . . .	7.24		61.9	62.5	57.9	62.6	61.5
7.77	19.27	.00	— 1 17.17	306 51 53.40	61.34	20 2 45.96	— 14 14 28.69	7.17	11.99	61.3	62.0	57.8	62.9	61.0
7.80 —	0.77	. .	. .	. . . .	. .	20 36 15.80	. . . .	3.50		61.9	62.7	57.7	62.8	61.5
7.82 +	1.64	. .	. .	. . . .	. .	21 0 5.82	. . . .	4.84		62.0	63.0	57.5	63.3	61.4
7.86 —	0.47	.00	0 33.45	330 17 26.07	. .	21 36 43.04	+ 9 11 3.98	5.64	+20.35	61.92	62.82	57.86	62.76	61.34
7.88	.42	.00	1 13.81	308 24 7.65	. .	22 0 49.39	— 12 48 14.68							
10.66	.68 +	.01	— 0 0.25	359 45 29.24	62.23	18 31 46.99	+ 38 39 6.26	4.77	—19.42					
10.84	1.19	.00 +	25.00	23 3 18.70	62.90	21 14 58.94	+ 61 56 55.05	+ 1.13	+ 8.30					
10.85	1.66 —	.01 +	35.30	31 0 21.61	. .	21 26 43.94	+ 69 53 57.95	— 1.28	10.52					
10.86	0.47	.00 —	33.56	330 17 28.61	63.58	21 36 43.44	+ 9 11 4.28	5.68	20.29		Oct. 14	Day	(M.)	180
10.88	.44	.02	49.31	320 3 11.03	. .	21 57 58.69	— 1 3 13.30	5.97	25.93	2.2	2.7	2.5	3.5	2.7
10.92	.47	. .	. .	. . . .	. .	22 33 53.30	. . . .	5.50		1.3	2.0	1.2	3.0	1.8
10.92	6.01	.00	1 8.98	310 12 2.41	. .	22 37 6.31	— 10 54 30.58			1.4	2.2	1.8	3.0	2.1
		— 0 17.30	1 9.00	310 11 45.09						1.63	2.30	1.84	3.17	2.2
10.95	0.49 +	0.01	0 26.95	335 29 51.61	. .	22 57 12.12	+ 14 23 27.28	5.33	29.41					
11.01	.58	.02	11.17	349 21 33.85	. .	0 0 33.51	+ 28 15 9.52	5.08	33.28					
11.02	6.15	.00 —	27.14	335 26 46.26	. .	0 5 25.51	+ 14 20 21.93	5.35	34.84					
11.05 —	1.00 +	.01 +	17.98	16 48 36.51	. .	0 31 57.52	+ 55 42 12.18	4.28	35.14					
. .	. . —	21.63	1 9.74	49 36 14.98	. .						Oct. 14	Night	(M.)	180
. .	. .	9.09	1 9.76	14.84	. .					2.2	3.4	4.1	5.7	4.1
. .	. . —	2.03	1 9.79	16.31	. .					3.2	3.3	4.1	4.4	3.7
11.11 +	47.43 +	0.14	1 9.79	17.48	. .	1 5 37.99	+ 88 29 51.43	— 32 15	42.07	3.0	3.1	3.4	4.4	3.4
. .	. . —	3.32	1 9.81	16.96	. .					2.6	2.8	3.5	4.1	3.2
. .	. .	10.49	1 9.83	15.91	. .					2.7	2.8	3.5	4.4	3.3
. .	. . —	23.43 +	1 9.84	13.86	. .									
11.14 —	0.54	0.00	— 0 17.30	343 50 50.82	. .	1 58 37.96	+ 22 44 26.49	+ 5.75	35.93	2.94	3.08	3.72	4.60	3.5
11.25	.45 +	.01	43.88	323 41 53.25	. .	2 35 26.33	+ 3 35 28.92	5.75	31.90					
11.26	.49	.00	20.17	334 49 27.99	. .	2 43 13.07	+ 13 42 52.95							
	—	21.40	20.17	334 49 6.59										
11.27	.43 +	0.01 —	42.42	324 35 45.06	. .	2 54 20.76	+ 3 29 20.73	5.60	30.36		Oct. 15		(M.)	180
11.29	.84 +	.02 +	10.99	10 25 6 83	. .	3 13 31.38	+ 49 18 42.50	+ 7.02	36.75	2.4	2.3	1.9	3.7	2.5
	—	0.3 —	39.86	314 10 13.38						2.5	3.0	2.3	4.5	3.0
11.87 —	.43				62.68	12 3 15.73	— 6 56 39.45			2.0	2.4	1.1	3.2	2.1
	—	59.56 —	40.00	314 9 13.59						2.4	2.7	1.9	4.0	2.7
. .	. . +	23.22 +	1 16.96	52 36 32.25	. .					2.5	2.9	2.1	3.8	2.8
. .	. .	10.45	1 16.94	32.34	. .									
. .	. .	2.71	1 16.92	31.48	. .									
11.93 +	5 34.74	0.11	1 16.89	28.17	. .	13 5 36.06	+ 88 29 52.91	— 32.17	+41.88	2.36	2.66	1.86	3.84	2.68
. .	. .	2.94	1 16.88	30.84	. .									
. .	. .	16.38	1 16.89	29.97	. .									
. .	. .	22.01 +	1 16.88	28.01	. .									
12.12 +	0 5.44	0.02 —	0 20.08	341 5 13.20	. .	14 8 41.65	+ 19 58 49.77	+ 7.46	—54.11					
12.14 +	3.58	.01	1 16.44	305 35 0.69	. .	14 22 49.67	— 15 31 22.74				Oct. 16	Night	(M.)	180
12.39 —	0.60	.02	0 0.24	359 45 30.87	. .	18 31 46.90	+ 38 39 7.45	4.80	19.35	1.1	2.0	2.4	3.2	2.1
12.40	.54	.01	5.90	354 18 8.78	. .	18 44 27.19	+ 33 11 45.35	5.07	16.71	1.2	1.8	1.9	1.9	1.7
12.41	.38 +	.03	27.91	334 45 11.89	. .	18 58 24.80	+ 13 38 48.46	6.17	9.39	1.7	2.7	2.6	3.3	2.5
12.43	.31 —	.03	43.19	323 55 36.05	. .	19 17 49.29	+ 2 49 12.62	+ 6.67	— 1.96	1.1	2.3	2.4	3.4	2.3
		.00	39.88	314 30 54.07						1.2	2.9	2.1	3.0	2.3
— 13.25 —	0 0.26				. .	12 2 21.22	— 6 35 57.51			1.26	2.34	2.28	2.96	2.2
		— 0 56.94	— 0 40.18	314 29 56.83										

Object.	COR IN R.	Observed Semi-Diam.	
	Semi-Diam.	Hor.	Vert.
	m. s.	m. s.	′ ″
Saturn .	+ 0 0.62	. .	0 8.66
Mars .	+ 0.66	. .	10.70
Venus .	— 1.88	. .	29.89
Venus .	— 1.86	. .	28.62

4. (7th mag.) R should be 52m. probably.
18. Very faint at wire VI.
26. Observed for Dec. at 1h. 13m. 56s.
29, 33. Unsteady. 33. Blurred.
35. + 0″.14. Applied for def. ill'n.
40. Obs'd for Dec. at 13h. 7m. 20s.
41. " " " 13 20.
42. " " " 23 37.
44. Through clouds.
45. Unsteady and badly defined.
50. + 0″.27. Applied for def. ill'n.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean	CIRCLE & MICROMETER READINGS. A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	H. M. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Oct. 15	1	Polaris, S. P.							30.5		52 34 56.0	45.8	41.0	55.7	52.12	. .	30.376	50.1	51.1	M.
	2							31.0			34 68.4	59.0	64.2	7.4	64.75	. .				
	3						33.0			13 1 59.75	35 15.2	7.2	12.8	15.1	12.57	. .	30.372	50.2	51.5	
	4					29.0					35 18.6	8.7	15.0	16.4	14.40	. .	30.366	50.8	51.9	
	5				50.0						35 16.1	7.0	12.0	16.5	12.90	. .	30.366	50.8	51.9	
	6			25.0							34 68.4	54.5	63.5	77.0	63.42	. .	30.362	51.0	52.0	
	7	Sun, 1st & N. L. (Mic. 6)	36.2	49.9	58.7	9.4	21.0	32.5	43.0	13 23 9.81	312 18 28.2	29.5	32.2	33.1	30.75	40.124	30.346	51.5	52.1	
	8	Sun, 2d & S. L. (Mic. 2)	46.5	58.1	9.0	30.9	31.0	42.0	54.2	13 25.20.24		"	"	"	"	34·712	"	"	"	
	9	Mercury, 1st & N. L.	7.1	19.2	30.2	41.2	53.2	4.4	16.3	18 28 41.66	305 1 42.2	43.7	47.2	49.0	45.55d	. .	30.328	55.0	54.7	
	10	Mercury, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .		"	"	"	"	40.002	"	"	"	
16	†11	α Scorpii	41.0	53.0	5.2	17.0	30.1	42.0	54.2	16 20 17.50	295 3 14.5	18.1	17.2	13.4	15.80	. .	30.294	55.6	55.7	
	12	α Lyræ	18.8	33.0	47.0	1.0	15.0	29.0	43.0	17 32 0.97	359 45 31.5	29.8	31.0	33.3	31.40	. .	30.250	55.2	53.0	
	13	β Lyræ	..	..	..	..	..	8.0	21.0	18 45 14.50	354 18 14.7	13.4	13.8	15.8	14.42	. .	30.298	55.2	52.4	
	†14	ζ Aquilæ	..	16.0	27.2	38.5	50.0	1.5	12.2	18 58 38 58	334 45 37.2	40.9	40.9	43.8	40.70	. .	30.046	54.7	52.0	
	15	Moon, 1st & S. L. (Mic. 2)	15.0	26.8	39.0	50.7	2.1	13.8	26.1	19 15 50.50	303 20 30.8	32.7	37.7	39.4	35.15	36.320	30.242	54.0	50.9	
	16	Moon, N. L. (Mic. 6.)	..	..	..	..	..	..	..	. . . .		"	"	"	"	40.124	. .	. .	. .	
	17	γ Aquilæ, (Mic.)	42.0	53.0	4.4	15.0	26.5	37.8	49.0	19 39 15.42	313 19 31.4	32.5	32.3	36.6	33.42	44.405	30.244	54.2	49.9	
	18	α Aquilæ	2.0	13.4	24.0	35.4	46.1	57.3	9.1	19 43 35.33	329 35 25.5	27.7	29.5	31.5	28.55	. .	30.244	54.0	49.3	
	19	β Aquilæ	30.9	42.2	53.0	4.4	15.2	26.1	37.3	19 48 4.16	327 9 5.3	8.1	11.0	12.3	9.17	. .	30.244	54.0	49.0	
	20	ε Pegasi	24.0	35.2	46.3	57.1	8.1	19.3	30.5	21 36 57.22	330 17 56.5	59.5	60.4	62.5	59.72	. .	30.264	54.2	46.0	
	21	α Pisces Aust. (Mic. 4.)	50.2	3.0	16.1	28.5	41.5	54.4	7.0	22 49 28.67	290 15 0.0	2.0	7.8	6.2	4.0	43.525	30.260	55.2	44.5	
18	22	Sun, 1st & N. L. (Mic. 6)	7.4	18.5	29.6	40.5	51.9	3.0	14.2	13 30 40.71	311 34 23.3	24.9	25.7	30.1	26.01	40.155	30.238	55.5	57.9	
	23	Sun, 2d & S. L. (Mic. 2.)	18.0	29.4	40.4	51.0	2.8	14.0	25.1	13 32 51.53		"	"	"	"	34.827	"	"	"	58.8
	24	Mercury, 1st & N. L.	23.5	35.2	46.5	58.0	9.3	21.1	33.0	14 39 58.09	303 55 17.2	18.8	22.1	25.4	20.86d	. .	30.200	56.5	59.8	
	25	Mercury, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .		"	"	"	"	40.012	"	"	"	
	26	α Lyræ	20.4	35.0	48.5	2.6	16.9	30.8	45.0	18 32 2.74	359 45 27.4	26.7	26.9	29.0	26.50	. .	30.148	62.8	63.0	
	27	β Lyræ	4.1	17.2	30.0	43.0	26.3	9.5	22.9	18 44 43.29	354 18 10.5	9.9	11.8	13.5	11.42	. .	30.146	62.8	62.3	
	28	ζ Aquilæ	6.5	18.0	29.1	40.2	51.5	3.1	14.2	18 58 40.37	334 45 31.8	35.8	36.0	40.2	35.95	. .	30.144	62.8	61.5	
	29	δ Aquilæ	31.7	43.0	54.0	5.0	16.0	27.0	37.9	19 18 4.95	323 56 9.0	14.5	15.8	18.7	14.50	. .	30.142	62.0	61.0	
	†30	α Aquilæ	4.0	15.5	26.5	37.0	48.5	0.0	11.0	19 43 37.50	. . . .	.	.	.	.	. .	.	.	.	Mu.
	†31	Anon.	20.8	32.4	..	..	5.2	16.0	28.0	20 5 56.48	. . . .	.	.	.	.	. .	.	.	.	
	32	61¹ Cygni	40.2	54.5	8.5	22.0	36.2	50.0	4.0	21 0 22.20	. . . .	.	.	.	.	. .	.	.	.	
	33	Neptune	11.0	22.5	33.2	45.0	56.0	7.0	18.2	22 0 44.70	. . . .	.	.	.	.	. .	.	.	.	
	34	Venus, 2d & N. L.	14.9	25.8	36.9	47.9	59.0	10.0	21.1	12 0 47.99	315 25 59.6	60.6	63.0	66.0	62.30	. .	30.084	53.0	59.8	M.
	35	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .		"	"	"	"	38.695	"	"	"	
	36	Polaris, S. P.							27.5		52 34 54.9	41.8	50.0	54.7	50.35	. .	30.078	59.4	61.9	
	37							25.5			34 67.5	55.8	62.8	66.9	63.25	. .	30.076	59.5	62.0	
	38						25.0				35 19.1	2.8	9.8	13.7	11.35	. .				
	†39					24.0				13 5 24.73	35 17.8	7.4	14.2	16.7	14.02	. .	30.074	59.8	62.4	
	40				27.5						35 16.1	3.4	10.8	14.4	11.17	. .				
	41			19.0							34 67.6	55 9	64.5	66.8	63.70	. .	30.068	60.0	62.7	
	42		25.0								34 55.5	41.4	49.4	53.5	49.95	. .	30.068	60.1	63.0	
19	43	Sun, N. L. (Mic. 6.)	..	..	..	..	..	..	..	. . . .	311 12 38.2	34.7	37.9	40.4	37.80	40.149	30.060	60.2	64.0	
	†44	Sun, 2d & S. L. (Mic. 2.)	4.0	14.9	26.0	37.8	49.0	0.1	11.0	13 36 37.54		"	"	"	"	34.818	"	"	"	
	†45	α Lyræ	20.7	35.0	48.7	3.2	17.1	31.1	45.0	18 32 2.91	359 45 30.9	30.3	30.6	32.4	31.05	. .	30.002	62.7	69.0	
	†46	β Lyræ	4.0	17.5	30.6	43.4	..	..	..	18 44 23.87	354 18 14.1	13.2	13.9	17.2	14.60	. .	39.004	63.0	67.9	
	47	ζ Aquilæ	6.5	..	..	40.7	52.0	3.0	14.6	18 58 47.36	334 45 35.3	38.9	38.4	42.0	38.65	. .	30.006	63.0	66.2	
	†48	γ Aquilæ (Mic.)	44.1	55.1	6.2	17.3	28.1	..	..	19 39 6.16	331 21 0.9	4.0	4.8	5.4	3.78	41.796	30.012	63.0	64.6	
	49	α Aquilæ	4.0	15.3	26.1	37.5	48.1	59.4	10.7	19 43 37.30	329 35 24.0	26.1	32.6	29.9	28.15	. .	30.014	63.0	64.4	
	50	β Aquilæ	33.0	44.2	55.2	6.3	17.2	28.0	39.2	19 48 6.16	327 9 3.5	6.8	8.9	9.4	7.15	. .	30.016	63.2	63.8	
20	†51	Sun, 1st & N. L. (Mic. 6)	38.4	49.8	0.9	12.5	23.4	34.5	45.9	13 38 12.20	310 51 0.0	0.4	4.3	5.0	2.42	40.154	30.230	60.0	59.3	
	52	Sun, 2d & S. L. (Mic. 2)	50.0	1.1	12.1	23.0	34.9	45.9	57.0	13 40 23.43		"	"	"	"	34.692	"	"	"	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	c.	Error of Runs.	Mic. coin. At		1 rev. = 34″.406
	h.	s.	s.	s.	″	h.	revs.	
Oct. 16, 19	f 13.61	g 0.050	—0.286	—0.293	— 0.12	14	40.124	
"						1	.133	
18, 19	15.40	.020			— 0.63	14	.155	
"						20	.156	
19, 19	15.61	.015				14	.149	
20, 19	15.90	.015			— 0.17	14	.154	
" 1	16.23	.030						

21. Wires V, VI recorded 40s.5, 53s.4
30. Transit recorded 30s less.
31. Dec.—14° 16′ 20″ nearly.

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN Æ.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					°
. .	. . .	+ 0 23.24	+ 1 16.63	52 36 31.99	. .					Oct.	18,		(M.)	180 0
. .	. . .	10.40	1 16.66	31.81	. .					0′9	1″4	1″4	3″4	1″78
. .	. . .	2.65	1 16.71	31.93	. .	13 5 37.97	+ 88 29 51.53	— 32.18	+ 41.50	1.4	2.0	2.1	3.0	2.13
— 13.31	+ 3 51.53	0.03	1 16.76	31.13	. .					0.7	1.3	1.2	2.5	1.42
. .	. .	2.28	1 16.80	31.98	. .					1.3	1.8	1.0	2.8	1.72
. .	. .	9.50	+ 1 16.82	29.74	. .					0.8	1.8	1.0	2.7	1.58
										1.02	1.66	1.34	2.88	1.73
13.33	— 0 0.25	+14 28.21	— 0 57.57	312 32 1.39	62.21	13 34 1.44	— 8 50 29.52							
		—17 46.57	58.73	311 59 45.49										
		0 0.00	1 17.75	305 0 27.80	. .	14 28 28.23	— 16 5 57.30							
13.38	— .23	— 4.20	1 17.83	305 0 23.52										
13.47	0.19	+ .01	2 3.79	295 1 12.02	62.21	16 20 3.84	— 26 5 10.94	+ 8.93	—27.80					
13.58	.60	.02	0 0.25	359 45 31.17	. .	18 31 46.79	+ 38 39 8.21	4.82	19.28					
13.59	33.27	.01	5.84	354 18 8.59	. .	18 44 27.64	+ 33 11 45.63	5.09	16.66					
13.60	0.38	+ .03	27.39	334 45 13.34	. .	18 58 24.60	+ 13 38 50.38	6.19	9.36					
		—16 51.22	61 44.86	304 5 28.79			— 17 0 54.17							
13.62	.22				. .	19 16 44.27				Oct.	19,	1h.	(M.)	179 5
		+14 28.17	+30 31.61	304 5 30.92			— 17 0 48.03							
13.64	.35	2 27.28	— 0 32.88	331 21 28.62	. .	19 39 1.43	+ 10 15 5.66	6.17	— 0.47					
13.64	.34	0.06	34.51	329 34 54.10	. .	19 43 21.35	+ 8 28 31.14	6.31	+ 1.74	57.3	59.8	59.0	59.3	58.85
										58.4	60.0	59.1	59.6	59.28
13.65	.33	.00	37.20	327 8 31.97	. .	19 47 50.18	+ 6 2 9.01	6.34	1.46	58.8	59.7	58.4	59.5	59.10
13.73	.35	.00	33.78	330 17 25.94	. .	21 36 43.14	+ 9 11 2.98	5.71	20.25	58.9	59.8	58.4	59.7	59.20
13.79	.17	16 24.88	2 35.89	290 40 52.99	. .	22 49 14.61	— 30 25 29.97	6.50	+38.66	59.0	60.0	58.5	59.8	59.33
										58.48	59.86	58.68	59.39	59.15
15.29	.25	+14 28.19	0 58.15	311 47 56.05	61.72	13 31 30.58	— 9 34 32.88							
		—17 43.66	59.21	311 15 43.14										
		0 0.00	1 19.83	303 54 1.03	. .	14 39 42.74	— 17 12 23.95							
15.31	.22	— 4.92	1 19.92	303 53 56.02										
15.39	.60	0.10	0 0.24	359 45 27.36	. .	18 31 46.84	+ 38 39 4.89	4.87	—19.13					
15.40	.54	.04	5.70	354 18 5.76	. .	18 44 27.35	+ 33 11 43.39	5.14	16.53					
15.40	.38	.12	26.97	334 45 9.10	. .	18 58 24.59	+ 13 38 46.63	6.22	9.27					
15.41	.31	.16	41.68	323 55 32.66	. .	19 17 49.23	+ 2 49 10.19	6.71	— 1.88					
15.42	.34	. .	. . .	. . . .	. .	19 43 21.74	. . . .	6.35						
15.42	2.49	. .	. . .	. . . .	. .	20 5 38.57	— 14 16 . .	7.27		Oct.	20,	14h.5	(M.)	179 5
15.44	0.60	. .	. . .	. . . .	. .	21 0 6.16		+ 4.99		59.2	60.1	58.2	60.4	59.48
15.46	.24	. .	. . .	. . . .	. .	22 0 29.00				58.7	59.8	58.7	59.9	59.27
		0.20	36.33	315 28 25.77						58.6	59.9	58.0	60.0	59.13
15.50	— .27	— 50.02	— 36.88	315 27 35.20	. .	12 0 30.42	— 5 38 19.46			58.7	59.5	58.1	59.4	58.92
. .	. .	+ 23.49	+ 1 14.43	52 36 28.27						59.1	60.1	48.6	60.3	59.53
					. .					58.86	59.88	58.32	60.00	59.27
. .	. .	10.69	1 14.42	28.36	. .									
. .	. .	2.86	1 14.39	28.60										
15.52	+ 22.08	0.06	1 14.36	28.44	. .	13 5 31.29	+ 88 29 52.03	— 31.89	+40.37					
. .	. .	2.35	1 14.32	27.84	. .									
. .	. .	9.47	1 14.28	27.45	. .									
. .	. .	21.92	+ 1 14.24	26.11	. .									
15.53	— 0.25	+14 28.19	— 0 57.78	311 26 8.21	59.15	13 35 16.24	— 9 56 18.80							
		—17 44.86	58.84	310 53 54.00										
15.60	— .60	0.00	0.24	359 45 30.81	. .	18 31 46.77	+ 38 39 10.91	+ 4.90	—19.05					
15.60	+ 19.09	.00	5.61	354 18 8.99	. .	18 44 27.36	+ 33 11 49.09	5.16	16.46	Oct.	20,	23h.5	(M.)	180 0
15.61	— 7.13	.00	26.60	334 45 12.05	. .	18 58 24.62	+ 13 38 52.14	6.24	9.22	3.1	4.5	4.5	4.3	4.10
15.62	+ 10.79	+ 0 56.49	30.91	331 21 29.36	. .	19 39 1.33	+ 10 15 9.46	6.22	— 0.39	2.8	4.5	4.9	6.4	4.65
15.62	— 0.34	0.00	33.24	329 34 54.91	. .	19 43 21.34	+ 8 38 35.01	6.36	+ 1.82	2.9	4.5	5.2	5.8	4.60
15.62	.33	. .	36.61	327 8 30.54	. .	19 47 50.21	+ 6 2 10.64	6.39	+ 1.54	2.8	4.6	4.7	5.4	4.38
										2.4	3.0	4.2	4.6	3.78
— 15.82	— 0 0.25	+14 28.19		59.51 311 4 31.10	59.26	13 39 1.74	— 10 17 57.74			2.80	4.40	4.70	5.30	4.30
		—17 48.26	— 1 0.72	310 32 13.44										

Object.	COR. IN Æ.	Observed Semi-diam.	
	Semi-Diam.	Hor.	Vert.
	m. s.	m. s.	′ ″
7 Sun . .	. . .	1 5.21	16 7.95
9 Mercury	+ 0 0.18		
5 Moon .	1 7.61	. . .	15 34.32
2 Sun . .	. . .	1 5.41	16 6.45
4 Mercury	+ 0 0.18	. . .	0 2.51
4 Venus .	— 1.80	. . .	25.32
4 Sun . .	— 1 5.52	. . .	16 7.10
1 Sun . .	. . .	1 5.61	16 8.83

3, 39. Unsteady.
8, 11, 14. Clock beat almost inaudible through noise of masons at work.
10. — 0″.08 applied for defective illumination.
16. + 6″.22 applied for defective illumination.
44. Observed for dec. at 13h. 36m. 20s.
45, 46, 48. Through clouds.

DATE. 1847.	No. for ref	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Oct. 20	1	α Bootis	23.1	35.1	46.2	58.2	9.4	21.2	33.1	14 8 58.05	341 5 27.4	29.5	29.8	33.4	30.02	. .	30.224	60.8	60.4	M.
	†2	Mercury, 1st & N. L.	34.2	46.5	58.0	9.5	21.0	32.6	44.3	14 51 9.44	302 52 22.1	20.4	22.8	26.8	23.14d	. .	30.208	61.5	61.0	
	†3	Mercury, S. L. (Mic.)	..	..	..	..	..	..	..	. . .	"	"	"	"	"	40.000	"	"	"	
	4	α Lyræ	1.4	35.2	49.2	3.2	17.1	31.4	45.2	18 32 3.24	359 45 29.9	28.0	28.2	30.8	29.22	. .	30.214	62.2	59.0	
	5	β Lyræ	4.5	18.0	31.0	44.0	57.2	10.1	23.2	18 44 44.00	354 18 11.6	11.4	10.9	13.0	11.72	. .	30.229	62.0	58.8	
	6	ζ Aquilæ	7.0	18.5	29.4	41.0	51.9	3.6	14.8	18 58 0.89	334 45 32.5	37.1	35.5	39.3	36.10	. .	30.228	62.0	58.2	
	7	δ Aquilæ	32.4	43.8	54.2	5.5	16.3	27.1	38.2	19 18 5.36	323 56 10.3	14.0	14.2	6.7	11.30	. .	30.238	61.3	57.5	
	8	γ Aquilæ	..	..	..	..	28.5	49.5	50.9	19 39 39.63	. . .	.	.	.	.	. .				
	9	α Aquilæ	..	15.4	26.4	37.8	48.7	0.0	11.1	19 43 43.23	329 35 25.9	27.5	29.6	29.5	28.12	. .	30.244	61.2	53.2	
	10	β Aquilæ	33.2	44.2	55.2	6.5	17.4	28.5	39.4	19 48 6.34	327 9 2.1	5.8	9.0	9.0	6.47	. .	30.244	61.0	53.0	
	†11	α Piscis Australis	52.3	5.0	18.2	31.0	42.4	56.0	9.3	22 49 30.74	. . .	.	.	.	.	. .				
	12	Moon, 1st & S. L.	32.2	44.1	55.2	6.3	18.0	29.1	40.2	23 6 6.44	317 3 21.4	26.3	26.5	27.8	25.50	. .	30.254	55.8	45.9	
	†13	α Andromedæ	12.8	25.4	37.4	50.0	1.8	14.4	27.5	0 0 49.90	349 21 14.2	45.1	44.0	48.0	45.33	. .	30.266	55.5	45.0	
	14	α Cassiopeiæ	16.0	36.1	55.0	14.5	34.4	53.3	13.1	0 32 14.63	16 48 20.8	14.3	18.0	21.2	18.58	. .	30.262	55.0	44.8	
	15	Polaris	19.0								49 35 33.8	26.0	29.8	34.9	31.37	. .	30.256	54.7	44.9	
	16			24.0							20.7	11.8	18.0	22.7	18.30	. .				
	17				19.0						12.9	2.4	10.9	14.4	10.15	. .	30.252	53.6	44.4	
	†18					18.0				1 6 18.29	13.6	1.2	8.8	43.1	9.18	. .				
	19						17.0				14.5	3.7	12.4	15.7	10.58	. .	30.256	53.0	43.9	
	20							15.0			22.2	12.4	17.8	24.1	19.12	. .				
	21								16.0		31.6	24.3	30.2	33.8	29.97	. .	30.254	52.7	43.6	
	†22	α Arietis	19.2	30.7	42.8	54.8	6.5	18.2	30.0	1 58 54.59	343 51 8.7	9.2	9.8	13.1	10.20	. .	30.252	51.5	42.3	
	23	Mars, 1st & N. L.	30.2	41.2	52.3	3.2	14.0	25.2	37.1	2 36 3.31	334 34 33.9	38.7	39.6	40.3	38.14	. .	30.258	51.0	41.3	
	24	Mars, S. L. (Mic.)	..	..	..	..	..	..	..	. . .	"	"	"	"	"	39.477	"	"	"	
	25	α Ceti	4.9	15.9	27.0	37.8	48.4	59.7	10.3	2 54 37.71	324 36 27.3	32.4	34.1	35.7	32.37	. .	30.256	50.5	41.7	
	26	Venus, 2d & N. L.	46.0	57.2	8.1	19.2	30.1	41.2	52.1	12 0 19.13	316 3 7.5	10.7	12.6	18.3	12.28	. .	30.352	53.0	52.8	
	27	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . .	"	"	"	"	"	38.730	"	"	"	
	28	Polaris, S. P.							31.0		52 34 49.2	36.2	45.4	48.0	44.70	. .	. . .		56.3	Mu.
	29							25.0			65.8	54.4	60.9	64.2	61.32	. .	30.340	55.0	57.0	
	†30						26.0			12 59 52.20	71.5	58.6	69.9	71.1	67.78	. .	30.340	55.1	57.0	
	31					22.0					75.1	62.9	72.2	75.1	71.32	. .				
	32			37.0							64.6	54.4	63.6	64.2	61.70	. .	30.330	56.5	59.0	
21	33	Sun, 1st L. N. L. (Mic. 5)	27.0	38.0	49.0	0.2	11.2	33.0	34.0	13 42 0.37	310 29 35.4	37.0	39.8	42.9	38.78	40.154	30.326	57.5	64.8	
	34	Sun, 2d L.	38.2	49.2	0.2	11.2	22.3	34.0	45.0	13 44 11.49										
	35	α Pegasi	56.2	7.5	18.5	30.0	41.5	52.5	4.0	22 57 30.03	335 30 13.6	17.3	18.3	18.9	17.02	. .	30.242	57.5	50.8	
	36	ι Piscium	53.5	4.5	15.5	26.0	37.5	48.2	59.5	23 32 26.31	325 55 14.2	16.8	18.8	19.5	17.32	. .	30.238	56.9	49.4	
	37	Polaris	8.0								49 35 28.9	19.5	27.1	28.1	25.90	. .	30.222	55.0	49.1	
	38			16.0							35 14.9	4.2	13.1	16.0	12.05	. .				
	39				18.0						35 12.8	3.5	11.1	13.3	10.17	. .				
	40					17.0				1 6 13.57	34 66.5	57.2	65.5	66.5	63.93	. .	30.222	54.9	48.9	
	41						11.0				34 68.9	59.5	68.1	70.2	66.67	. .				
	42							13.0			35 14.0	8.9	15.5	18.0	14.10	. .				
	43								12.0		35 27.5	17.8	26.2	29.5	25.25	. .	30.216	54.5	48.7	
	†44	Venus, 2d & N. L.	46.1	57.2	8.0	19.1	30.0	41.0	52.0	12 0 19.06	316 18 48.1	50.2	51.2	52.9	50.60	. .	30.136	60.0	61.4	M.
	†45	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . .	"	"	"	"	"	38.621				
22	†46	Sun, 1st & N. L. (" 6)	14.1	25.2	37.1	48.0	59.2	10.3	21.5	13 45 47.86	310 8 8.8	10.1	12.5	13.6	11.25	40.142	30.098	61.4	65.2	
	†47	Sun, 2d & S. L. (" 2)	26.0	37.2	48.3	59.0	11.7	21.9	32.8	13 47 59.47	"	"	"	"	"	34.722	"	"	"	
	48	α Pegasi	56.4	8.0	19.2	30.5	41.9	53.2	4.5	22 57 30.53	225 30 15.0	17.8	18.4	19.8	17.75	. .	29.982	61.2	58.1	
	49	γ Pegasi	10.0	..	32.3	44.0	55.5	6.6	18.1	0 5 47.75	335 27 7.2	10.6	12.4	15.0	11.30	. .	29.968	61.2	57.9	
	50	α Cassiopeiæ	17.8	37.7	56.9	16.0	35.6	55.2	14.8	0 32 16.29	16 48 20.0	15.9	18.9	21.2	19.00	. .	29.956	61.2	58.8	
	51	δ Piscium	..	55.0	6.0	16.8	28.2	39.5	50.2	0 41 17.09	227 55 21.5	25.0	27.6	28.8	25.72	. .	29.956	61.2	58.8	
	52	Polaris		22.5							49 35 20.0	11.5	15.9	21.8	17.30	. .	29.942	61.2	58.6	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.	1 rev. = 34″.406
h	s.	s.	s.	s.	″	h.	revs.	
Oct. 21, 23	f 17.50	g 0.040	—0.286	—0.293	—0.22	14	40.154	
						12	.142	
22, 0	18.07	.030			—0.57	14	.142	

5. Wire V recorded 52s.2
11. Wire IV recorded 30s.0

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean.
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					° ′
— 15.82	— 0 0.42	— 0 0.03	— 0 19.68	341 5 10.31	. .	14 8 41.81	+ 19 58 50.30	+ 7.46	—53.11	Oct.	21,		(Mu.)	179 59
15.83	.22	.00	1 22.90	302 51 0 24	. .	14 50 53.58	— 18 15 22.46			60′′9	61′′0	59′′9	62′′1	60′′98
		— 5.28	1 22.99	302 50 54.87						61.2	62.0	59.9	63.2	61.58
15.89	.60	+ .03	0 0.24	359 45 29.01	. .	18 31 46.75	+ 38 39 9.00	4.92	18.96	60.8	61.6	59.3	61.5	60.80
15.89	.54	.01	5.75	354 18 5.98	. .	18 44 27.57	+ 33 11 45.97	5.19	16.39	60.1	61.2	59.5	61.0	60.45
15.90	.38	+ .03	27.21	334 45 8.92	. .	18 57 44.61	+ 13 38 48.91	6.26	9.17	60.4	61.2	59.2	61.9	60.77
15.90	.31	— .05	42.10	323 55 29.15	. .	19 17 49.15	+ 2 49 9.14	6.76	— 1.81	60.68	61.40	59.56	61.94	60.90
15.91	22.64	. .	. .	. . .	. .	19 39 1.08	. . .	6.24						
15.91	5.89	— .03	— 34.22	329 34 53.87	61.78	19 43 21.43	+ 8 28 31.34	6.38	+ 1.85					
15.91	0.33	+ 0 0.01	— 0 37.66	327 8 28.82	. .	19 47 50.10	+ 6 2 6.29	6.41	1.57					
16.17	.17	. . .	. . .	. . .	. .	22 49 14.40	. . .	6.55						
16.18	.28	—18 37.46	+56 49.11	317 41 37.15	64.30	23 6 58.73	— 3 24 47.90			Oct.	21,	16h.	(Mu.)	180 0
16.21	.49	+ 0 0.04	— 0 11.15	349 21 34.22	. .	0 0 33.20	+ 28 15 9.17	5.10	32.45	0.3	1.3	0.9	2.4	1.23
16.22	.96	.02	+ 17.93	16 48 36.53	. .	0 31 57.45	+ 55 42 16.07	+ 4.29	34.45	0.2	1.3	1.2	2.3	1.25
. .	. .	— 21.63	1 9.60	49 36 19.34	. .					0.5	0.0	0.9	2.4	0.95
. .	. .	9.29	1 9.62	18.63	. .					0.8	0.7	1.2	2.6	1.32
. .	. .	2.23	1 9.64	17.56	. .					0.5	0.1	0.7	2.0	0.83
16.24	22.08	0.06	1 9.66	18.78	. .	1 5 39.97	+ 88 29 52.93	— 31.65	39.81					
. .	. .	2.93	1 9.68	17.33	. .					0.46	0.68	0.98	2.34	1.12
. .	. .	10.75	1 9.73	18.10	. .									
. .	. .	— 23.67	+ 1 9 79	16.09	. .									
16.27	0.44	+ 0.01	— 0 17.27	343 50 52.94	. .	1 58 37.88	+ 22 44 27.89	+ 5.69	35.31					
16.28	.37	— .00	20.37	334 34 17.77	. .	2 35 47.33	+ 13 27 41.17			Oct.	21,	13h.	(Mu.)	180 0
		— 23.08	20.38	334 33 54.68						2.4	3.5	1.9	2.8	2.35
16.29	.31	+ 0.03	42.43	324 35 49.97	. .	2 54 21.11	+ 3 29 24.92	+ 5.51	30.49	2.3	3.9	2.7	3.1	3.00
17.06	.27	+ .01	37.10	316 2 35.19	. .	12 0 0.04	— 5 4 14.59			2.7	4.2	3.2	4.0	3.53
		— 48.77	— 37.78	316 1 45.73						2.4	3.6	2.3	3.1	2.85
. .	. .	+ 22.87	+ 1 15.93	52 36 23.50	60.89					2.6	3.7	2.3	3.2	2.95
. .	. .	10.35	1 15.83	27.50	. .									
17.10	+ 5 57.60	+ 2.49	1 15.83	26.10	. .	13 5 32.70	+ 88 29 55.54	— 31.58	39.62	2.48	3.78	2.48	3.24	2.99
. .	. .	— 0.30	1 15.80	26.82	. .									
. .	. .	+ 9.39	+ 1 15.49	26.58	. .									
17.13	— 0 0.25	14 28.32	—17 5.80	310 28 1.29	61.12	13 42 48.55	— 10 39 20.58							
17.50	.38	0 0.05	0 26.71	335 29 50.36	. .	22 57 12.15	+ 14 23 28.49	+ 5.40	29.06	Oct.	22,	Night.	(M.)	180 0
17.53	.32	+ .24	— 39.74	325 54 37.82	. .	23 32 8.46	+ 4 48 15.95	+ 5.61	32.98	1.8	3.8	3.9	3.9	3.35
. .	. .	— 21.97	+ 1 8.95	49 36 12.88	. .					1.4	2.9	3.7	3.2	2.80
. .	. .	9.46	1 8.94	11.53	. .					0.8	3.5	3.2	3.8	2.83
. .	. .	2.20	1 8.96	16.93	. .					1.5	3.5	3.9	3.5	3.10
17.59	22.08	.01	1 8.97	12.89	. .	1 5 33.90	+ 88 29 51.04	— 31.52	39.24	1.35	5.42	6.67	3.60	3.02
. .	. .	2.77	1 8.97	12.87	. .									
. .	. .	10.62	1 8.98	12.46	. .									
. .	. .	— 23.41	+ 1 8.99	10.83	. .									
17.71	0.27	+ 0.16	— 0 35.38	316 18 15.38	63.02	11 59 59.34	— 4 48 35.00							
		— 52.17	— 36.27	316 17 22.16						Oct.	25,		(M.)	180 0
17.76	.25	+14 27.75	1 0.06	310 21 38.94	. .	13 46 35.65	— 11 0 52.95			1.4	3.5	3.5	3.5	2.98
		—17 47.27	1 1.28	309 49 22.70						1.1	2.7	3.2	2.8	2.45
18.04	.38	+ 0 0.06	0 26.11	335 29 51.70	. .	22 57 12.11	+ 14 23 27.93	+ 5.41	29.01	1.9	3.5	3.7	3.4	3.13
18.08	4.13	.04	— 26.16	335 26 45.18	. .	0 5 25.54	+ 14 20 21.41	5.37	34.36	1.9	3.9	4.0	3.9	3.43
18.09	0.96	.06	+ 17.26	16 48 36.32	. .	0 31 57.24	+ 55 42 12.55	4.30	33.91	1.5	3.4	3.5	3.4	2.95
— 18.09	— 5.86	+ .27	— 0 35.81	327 54 50.18	. .	0 40 53.14	+ 6 48 26.41	+ 5.43	+36.43					
. .	. .	— 0 9.31	+ 1 7.02	49 36 15.01	. .					1.56	3.40	3.58	3.40	62.99

Object.	COR. IN R.	Observed Semi-Diam.	
	Semi-Diam.	Hor.	Vert.
	m. s.	m. s.	′ ″
Mercury	+ 0 0.19	. . .	0 2.68
Moon .	+ 1 8.75		
Mars .	+ 0 0.67	. . .	11.55
Venus .	— 1.76	. . .	24.73
Sun . .	. . .	1 5.56	
Venus .	. . .	. . .	26.61
Sun . .	. . .	1 5.80	16 8.12

2. Faint and unsteady.
3. —0′′.09 applied for def. ill'n.
11, 13, 30. Very unsteady.
22. Unsteady by fits ; through mist.
44. + 0′′.88 applied for def. ill'n.
46, 47, 49. Through clouds ; faint.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Oct. 22	1	Polaris			18.0					1 9 48.62	49 35 14.5	5.9	11.4	15.8	11.90	. .				M.
	2	Polaris						20.0			22.5	15.0	20.3	25.1	20.72	. .				
	3	Polaris							14.0		35.8	28.4	31.4	37.0	33.15	. .	29.944	61.2	59.2	
	†4	Moon, 1st & S.L. (Mic. 1)	53.4	5.0	16.1	27.3	38.2	50.2	1.3	1 5 27.36	326 53 33.3	27.8	28.2	29.5	29.70	40.142	29.942	61.2	58.8	
	†5	Moon, N. L. (Mic. 6)	..	..	..	..	..	..	..	. . . .		"	"	"	"	38.365	"	"	"	
24	6	Venus, 2d L.	..	..	59.1	10.2	21.1	32.8	43.2	12 1 21.28	. . . .	.	.	.	. .	. .				
25	7	Iris, (Mic.)	..	..	..	36.0	..	58.4	9.5	20 13 54.63	307 15 7.2	7.4	12.1	14.0	10.17	39.980	30.028	61.6	57.5	
	8	Weisse XX, 387, (Mic.)	..	..	..	58.2	10.3	21.2	32.3	20 16 15.50		"	"	"	"	39.820	"	"	"	
	9	*α* Andromedæ	..	..	41.9	54.2	6.0	..	32.0	0 1 3.52	349 21 57.5	50.4	49.0	51.4	52.07	. .	30.122	60.8	53.2	
	10	*γ* Pegasi	12.4	23.9	34.7	46.0	57.8	9.1	20.0	0 5 46.27	335 27 10.3	11.8	13.2	14.2	12.37	. .	30.120	60.8	52.9	
	11	*α* Cassiopeiæ	20.0	40.0	59.0	18.4	38.2	57.3	16.8	0 32 18.53	16 48 22.7	24.6	20.9	23.5	22.92	. .	30.124	60.2	51.9	
	12	*β* Ceti	..	..	..	..	30.0	40.9	53.2	0 36 41.36	302 18 32.2	33.4	36.7	37.3	34.90	. .	30.124	60.3	51.7	
	13	Polaris	21.0								49 35 32.4	24.9	29.4	32.8	29.87	. .	30.128	59.6	51.8	
	14	Polaris		23.0							21.4	13.0	18.0	23.6	19.00	. .				
	15	Polaris			20.0						14.7	7.4	12.0	16.2	12.57	. .				
	16	Polaris				19.0				1 6 17.77	14.5	4.7	11.5	15.1	11.45	. .	30.132	58.2	58.0	
	17	Polaris					15.0				16.5	8.5	14.2	16.8	14.00	. .				
	18	Polaris						14.0			22.8	14.2	20.5	24.1	20.40	. .				
	19	Polaris							13.0		34.5	27.1	31.4	36.3	32.32	. .	30.134	58.0	50.9	
	20	*α* Arietis	23.1	35.2	47.3	59.0	10.8	22.5	34.7	1 58 58.94	343 51 7.4	8.2	9.1	12.0	9.17	. .	30.138	56.7	50.5	
	21	Mars, 1st & N. L.	40.1	51.0	3.0	13.9	25.0	36.4	47.7	2 29 13.87	334 19 6.3	12.6	13.0	4.0	8.98	. .	30.152	56.0	49.8	
	22	Mars, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	"	"	"	"	"	39.506	"	"	"	
	23	*γ* Ceti	14.4	25.1	36.3	47.5	58.2	9.2	20.3	2 35 47.29	323 42 33.8	37.1	39.8	41.8	37.90	. .	30.152	56.0	49.8	
	24	*α* Ceti	..	20.0	30.8	41.9	52.8	4.0	15.0	2 54 47.42	324 36 25.2	30.0	32.2	33.1	30.12	. .	30.158	55.5	49.0	
	25	*α* Persei	2.0	19.5	36.0	53.2	10.0	26.4	43.2	3 13 52.90	10 24 60.0	56.9	58.2	63.4	59.62	. .	30.166	55.2	48.5	
	26	*ζ* Tauri	44.5	55.9	6.8	17.7	29.0	40.0	51.2	3 19 17.87	330 18 48.5	52.2	52.6	54.3	51.90	. .	30.168	55.2	48.0	
	27	*η* Tauri	13.5	25.5	37.2	49.2	1.1	13.4	25.5	3 38 49.34	344 44 22.3	26.2	25.8	26.8	24.80	. .	30.180	55.0	47.8	
	†28	Moon, 2d & N.L. (Mic. 6)	3.2	15.2	27.0	39.0	50.4	2.4	14.2	4 14 38.77	337 35 19.8	24.5	25.4	27.4	24.28	40.141	30.192	54.1	46.7	
	†29	Venus, 2d & N. L.	12.5	24.2	35.0	45.2	56.5	6.5	17.5	12 1 45.34	317 10 56.2	57.2	61.1	61.2	58.92	. .	30.366	45.0	50.2	Mu.
	30	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	"	"	"	"	"	49.112	"	"	"	
	31	Polaris, S. P.						30.0			52 34 59.1	45.8	53.5	58.8	54.30	. .	30.370	49.2	46.5	
	32	Polaris, S. P.				25.0				13 5 25.00	68.5	56.0	64.1	67.8	64.10	. .	30.374	49.2	46.9	
	33	Polaris, S. P.		20.0							60.4	48.9	58.3	59.9	56.88	. .	30.378	49.0	47.0	
26	34	Sun, 2d & N. L. (Mic. 6)	45.0	55.5	7.0	19.0	30.0	41.0	52.5	14 3 18.57	308 44 47.8	47.1	52.1	52.1	49.77	40.147	30.382	51.0	48.0	
	35	Sun, S. L. (Mic. 2)	..	..	..	..	..	..	..	. . . .	"	"	"	"	"	34.440	"	"	"	
	36	*α* Aquilæ	10.0	21.2	32.0	43.2	54.5	5.5	16.5	19 43 43.27	329 35 32.3	32.3	34.2	37.1	33.97	. .	30.422	55.4	44.3	
	37	Weisse XX, 268	4.0	15.5	26.5	38.0	49.0	0.5	12.2	20 11 37.86	307 12 14.9	15.2	20.5	21.6	18.05	. .	30.426	54.5	43.0	
	38	Weisse XX, 387 (Mic.)	26.2	37.2	48.5	0.0	11.0	22.5	34.0	20 16 59.91	"	"	"	"	"	44.790	"	"	"	
	39	Neptune	59.0	10.2	21.5	32.5	44.0	55.5	6.5	22 0 32.74	308 14 55.4	57.2	62.1	63.1	59.45	. .	30.458	51.0	40.0	
	40	Saturn, N. L.	..	..	..	..	..	..	..	. . . .	310 5 24.2	22.2	27.0	29.5	25.72	. .	30.468	49.5	39.0	
	41	Saturn, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	"	"	"	"	"	39.454	"	"	"	
	42	Uranus	13.0	24.5	35.5	46.0	57.0	8.2	19.5	0 58 46.24	. . .	.	.	.	. .	. .	30.496	45.3	36.2	
	43	Mars, S. L.	..	..	..	..	..	..	..	. . . .	334 15 53.0	56.5	56.5	60.5	56.62	. .	30.502	44.0	35.9	
	44	Mars, N. L. (Mic.)	..	..	..	..	..	..	..	. . . .	"	"	"	"	"	39.368	"	"	"	
27	45	*δ* Aquilæ	..	..	1.0	11.5	22.4	34.0	44.7	19 18 22.72	323 56 15.7	19.0	17.4	21.9	18.50	. .	30.556	47.2	42.8	M.
	46	*γ* Aquilæ	50.4	1.4	13.1	24.0	34.9	46.3	57.2	19 39 23.90	331 21 57.8	60.8	57.4	62.5	59.65	. .	30.556	47.0	41.7	
	47	*α* Aquilæ	10.7	21.8	33.1	44.0	54.7	6.0	17.1	19 43 43.92	. . . .	.	.	.	. .	. .	30.556	47.0	41.8	
	48	Weisse XX, 268 (Mic.)	5.0	16.3	28.0	39.0	50.0	1.3	12.5	20 11 38.87	307 15 3.5	3.5	5.6	10.5	5.77	35.242	30.568	47.0	40.7	
	49	Weisse XX, 387 (Mic.)	..	..	..	..	11.4	23.2	35.2	20 17 23.26	"	"	"	"	"	39.920				
	50	*ε* Pegasi	32.4	44.1	54.7	6.2	17.0	28.4	39.4	21 37 6.03	330 17 56.9	60.6	59.8	64.5	60.45	. .	30.558	44.3	37.3	
	51	*α* Aquarii	48.2	59.3	10.6	20.8	32.3	43.2	54.3	21 58 21.24	. . . .	.	.	.	. .	. .				
	†52	Neptune	..	..	..	..	..	..	5.8	22 1 5.80	308 15 49.5	51.9	53.8	59.0	53.55	. .	30.564	43.9	36.8	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.	1 rev. = 34″.406
	h.	s.	s.	s.	″	h.	revs.	
Oct. 24,		*g* 0.030	—0.286	—0.293	—0.29			
25, 2	*f* 20.43	.038			— .29	20	40.135	
"					— .29	12	.147	
"						4	.141	
26, 20	21.64	.045			+ .26	15	.147	
27, 22	22.43	.040			— .47		.141	
"						12	.127	

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN Æ.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359°59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D	Mea
s.	M s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″					°
− 18.11	− 3 52.11	− 0 2.21	+ 1 6.99	49 36 16.68	. .					Oct.	26,	16h.	(Mu.)	180
. .	. . .	10.78	1 6.97	16.91	63.02	1 5 38.40	+ 88 29 52.54	− 31.43	+390.6					
. .	. . .	23.44	1 6.95	16.66	. .					2″5	1″2	1″4	3″1	2″0
		−20 31.42	49 27.13	327 22 35.41	. .					2.8	3.0	1.9	4.0	2.9
18.11	0 0.33	+13 26.79	+15 48.61	327 22 45.10	. .	1 6 17.92	+ 6 16 11.74							
19.91	11.26	. . .	. . .	. . .	. .	12 0 48.46	+ 6 16 21.31			2.65	2.10	1.65	3.55	2.4
20.21	19.05	− 0 5.52	− 1 11.67	307 13 52.98	62.97	20 13 15.37	− 13 52 30.74							
20.21	17.16	− 11.01	1 15.38	307 13 43.78	. .	20 15 38.13	− 13 52 39.94	+ 7.31	14.61					
20.36	9.81	+ 0.08	0 10.91	349 21 41.24	. .	0 0 33.35	+ 28 15 17.52	5.13	31.84					
20.36	0.38	.02	− 26.55	335 26 45.84	. .	0 5 25.53	+ 14 20 22.12	5.38	34.22					
20.37	.96	.04	+ 17.59	16 48 40.55	. .	0 31 57.20	+ 55 42 16.83	4.32	33.11					
20.38	23.36	+ .06	− 1 31.88	302 17 3.08	. .	0 35 57.62	− 18 49 20.64	+ 5.48	40.39					
. .	. .	− 21.57	+ 1 8.34	49 36 16.64	. .									
. .	. .	9.28	1 8.34	18.06	. .									
. .	. .	− 2.12	1 8.47	18.92	. .									
20.40	− 22.09	+ 0.07	1 8.48	20.00	62.98	1 5 35.28	+ 88 29 54.72	− 31.38	37.95					
. .	. .	− 2.72	1 8.48	19.76	. .									
. .	. .	10.53	1 8.48	18.35	. .									
. .	. .	− 23.36	+ 1 8.49	17.45	. .									
20.43	− 0.44	+ 0.02	− 0 16.93	343 50 52.26	. .	1 58 38.07	+ 22 44 28.54	+ 5.65	34.83	Oct.	26,		(Mu.)	179
		.11	20.04	334 18 49.05						1.9	3.3	2.2	4.0	2.8
20.45	.37	− 21.72	20.04	334 18 27.22	. .	2 28 53.72	+ 13 12 14.41			1.6	2.7	1.8	3.0	2.3
20.45	.31	+ 0.06	43.01	323 41 54.95	. .	2 35 26.53	+ 2 35 31.23	5.39	32.21	1.3	2.1	2.1	3.6	2.2
20.47	5.80	.05	− 41.65	324 35 48.52	. .	2 54 21.15	+ 3 29 24.80	5.45	30.66	1.6	1.8	1.9	3.9	2.3
20.48	0.79	.10	+ 10.80	10 25 10.52	. .	3 13 31.63	+ 49 18 46.80	6.77	34.39	1.9	1.9	2.0	3.8	2.4
20.48	.35	+ .08	− 33.51	330 18 18.47	. .	3 18 57.04	+ 9 11 54.75	5.68	28.82					
20.49	.45	− .05	− 16.06	344 44 8.69	. .	3 38 28.40	+ 23 37 44.97	+ 6.19	28.65	1.66	2.36	2.00	3.74	2.4
20.51	.40	+14 28.13	+ 5 40.53	337 55 32.94	. .	4 13 6.58	+ 16 49 9.22							
		+ 0 0.12	− 0 36.48	317 10 22.57										
20.81	− .27	− 47.40	− 0 37.56	217 8 33.97	62.49	12 1 22.63	− 3 56 24.97							
. .	. .	+ 10.97	+ 1 17.50	52 36 22.77	. .									
20.85	+ 23.72	0.29	1 17.46	21.85	. .	13 5 27.87	+ 88 30 0.34	− 31.37	−37.77					
. .	. .	9.60	+ 1 17.60	24.08	. .									
20.98	− 0.24	+14 28.33	− 1 6.39	308 58 11.71	. .	14 1 51.14	− 12 24 24.71							
		−17 56.66	1 7.76	308 25 45.35										
21.24	.34	0 0.06	0 35.86	329 34 58.05	62.44	19 43 21.69	+ 8 28 34.86	+ 6.49	2.07					
21.26	.23	− .04	1 18.77	307 10 59.24	. .	20 11 16.37	− 13 55 23.95	7.36	13.88					
21.26	.23	+ 2 39.75	1 18.64	307 13 39.16	. .	20 16 38.42	− 13 52 44.03	7.32	+14.60					
21.34	.24	− 0 0.12	1 16.13	308 13 43.20	. .	22 0 11.16	− 12 51 39.99							
		+ .07	1 8.41	310 4 17.38										
. .		− 21.69	1 8.41	307 3 55.62	. .	. . . . .	− 11 2 16.69			Oct.	27,		(M.)	179
21.52	.32	. . .	. . .	. . .	. .	0 58 24.40								
										61.5	63.4	60.4	62.9	62.(
. .	.37	− 0 0.12	0 21.27	334 15 35.23						62.0	62.5	60.2	63.1	61.9
		26.94	21.27	334 15 8.41	. .	. . . . .	+ 13 8 58.63			61.5	62.3	60.2	63.4	61.8
22.32	11.27	− 0.11	43.82	323 55 34.57	61.41	19 17 49.13	+ 2 49 12.41	6.88	− 1.51	61.5	63.5	60.0	62.5	61.7
22.34	0.35	+ .16	32.95	331 21 26.86	. .	19 39 1.21	+ 10 15 4.70	6.36	− 0.07	61.3	62.0	59.8	62.4	61.4
22.34	.34	. . .	. . .	. . .	. .	19 43 21.24	. . . . .	6.50		60.7	61.4	59.3	62.8	61.(
22.36	.23	− 2 48.53	1 19.54	307 10 57.70	. .	20 11 16.28	− 13 55 24.46	7.37	+13.92	60.5	62.5	59.0	62.8	60.9
22.36	22.79	− 0 7.59	1 19.42	307 13 38.76	. .	20 15 38.11	− 13 52 43.40	7.34	14.69	60.4	61.0	59.3	62.9	60.9
22.42	0.35	0.00	0 34.74	330 17 25.71	. .	21 36 43.26	+ 9 11 3.55	5.88	+20.24	60.5	61.1	58.9	63.2	60.9
										61.1	61.2	59.6	63.4	61.3
22.43	.29	. . .	. . .	. . .	. .	21 57 58.52	. . . . .	+ 6.14						
− 22.43	− 33.94	+ 0 0.47	− 1 16.56	308 14 37.46	. .	22 0 9.43	− 12 51 44.70			61.10	61.89	59.67	62.98	61.(

. Objects.	COR. IN Æ.	Observed Semi-diam.	
	Semi-diam.	Hor.	Vert.
	M. s.		′ ″
Moon .	+ 1 9.00		16 46.26
Venus .	− 0 1.65		
Mars .	+ 0.67		0 10.92
Moon .	− 1 11.28		
Venus .	− 0 1.63		24.30
Sun .	− 1 6.21		16 13.18
Saturn .			0 10.89
Mars .			13.41

4. Observed for Dec. at 1h. 6m. 45s.
5. +3″.86 applied for defective illumination.
28. Observed for Dec. at 4h. 13m. 20s.
29. +1″.05 applied for defective illumination.
52. Observed for Dec. at 22h. 1m. 27s.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Oct. 27	1	ζ Pegasi	42.3	54.0	5.3	16.1	27.2	38.4	49.7	22 34 16.14	. . .	.	.	.	.	. .	. .	.	35.4	M
	2	α Piscis Australis	58.3	11.5	24.0	36.6	49.2	2.3	14.6	22 49 36.64	290 43 21.5	21.8	23.0	28.4	23.29	. .	30.576	43.0	35.4	
	3	α Pegasi	1.0	12.1	23.8	35.0	46.2	57.3	8.9	22 57 34.90	. . .	.	.	.	.	. .	30.580	42.8	34.9	
	†4	γ Pegasi	14.2	26.2	37.0	48.5	59.8	11.1	22.4	0 5 48.46	335 27 13.4	15.2	13.8	19.7	15.52	. .	30.590	42.8	34.0	
	5	α Cassiopeiæ	22.4	41.9	1.0	21.4	40.2	0.0	19.2	0 32 20.87	16 48 22.7	17.0	16.8	23.5	20.00	. .	30.592	42.4	33.0	
	6	Polaris	27.0								. . .	.	.	.	.	. .				
	7			28.0							49 35 18.0	8.4	11.7	18.0	14.02	. .	30.592	41.5	32.8	
	8				28.0						35 10.4	0.3	6.6	12.2	7.37	. .	30.592	40.8	33.0	
	9					27.0				1 5 14.67	34 69.0	59.0	63.8	70.8	66.15	. .	30.588	.	33.0	
	10							20.0			35 17.6	10.1	18.4	19.6	16.40	. .				
	11								18.0		35 31.4	23.8	25.0	33.1	28.32	. .	30.588	40.0	32.7	
	†12	Venus, 2d & N. L.	46.5	57.5	8.5	19.5	30.5	41.5	53.0	22 3 19.57	317 33 34.9	35.7	34.6	39.9	36.27	. .	30.730	41.9	39.0	M
	13	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	"	"	"	"	"	38.715				
	14								28.0		32 34 45.9	32.0	37.3	45.6	40.20	. .	30.736	42.1	40.0	
	15					30.0					67.4	54.8	61.0	69.0	63.00	. .				
	16	Polaris, S. P.			30.0					13 9 41.60	66.5	53.3	61.5	65.7	61.75	. .	30.736	42.0	40.4	
	17			28.0							. . .	.	.	.	.	. .				
	18		32.0								48.8	34.6	41.9	51.2	44.12	. .	30.736	41.0	40.4	
28	19	Sun, 1st & N. L. (Mic. 6)	18.0	29.0	40.0	51.0	2.0	14.0	25.2	14 8 51.31	308 4 5.4	5.6	5.8	9.8	6.65	40.127	30.730	43.8	42.0	
	20	Sun, 2d & S. L. (Mic. 2)	30.2	41.5	53.0	4.2	15.5	26.8	38.0	14 11 4.17	"	"	"	"	"	34.501	"	"	"	
	†21	Venus, 2d & N. L.	45.2	56.2	7.1	18.1	29.4	40.2	51.1	12 4 18.17	317 38 48.8	48.1	47.6	52.0	49.12	. .	30.690	42.0	37.8	M
	22	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	"	"	"	"	"	38.836	"	"	"	
29	23	Sun, 1st & N. L. (Mic. 6)	10.2	21.4	33.0	44.2	55.2	5.9	17.8	14 12 43.96	307 43 57.0	56.5	58.4	64.8	59.18	40.139	30.658	44.5	45.7	
	24	Sun, 2d & S. L. (Mic. 2)	23.4	34.0	45.8	57.2	8.5	20.0	31.4	14 14 57.19	"	"	"	"	"	34.578	30.652	45.3	46.8	
	†25	Mercury, Center	33.5	45.0	57.0	8.5	20.8	32.4	44.2	15 40 8.76	298 59 19.8	21.4	21.1	26.3	22.15	. .	30.602	48.0	48.4	
	26	δ Aquilæ	40.4	51.4	2.7	13.6	24.8	35.6	46.7	19 18 13.60	323 56 15.4	18.7	16.0	21.8	17.97	. .	30.540	48.8	46.5	
	27	γ Aquilæ	52.4	4.0	14.7	26.0	37.1	48.2	59.4	19 39 25.97	331 21 58.4	59.7	56.2	62.8	58.80	. .	30.542	48.8	46.1	
	28	β Aquilæ	41.4	53.0	3.5	14.7	25.7	37.0	48.0	19 48 14.76	327 9 3.7	7.4	6.8	9.8	6.92	. .	30.542	49.0	45.8	
	†29	Iris	14.5	25.4	37.0	..	..	10.5	..	20 18 36.85	307 26 14.2	15.2	16.0	21.2	16.65	. .	30.536	48.8	43.8	
	†30	ε Pegasi	34.5	45.2	56.4	7.4	19.0	30.0	41.3	21 37 7.69	330 17 56.6	59.4	57.8	62.8	59.15	. .	30.526	48.0	39.0	
	†31	Neptune	57.2	8.2	19.3	31.0	41.8	53.2	4.5	22 0 30.74	308 15 32.0	34.5	36.8	40.4	35.92	. .	30.518	47.8	38.3	
	32	Saturn, 1st & N. L.	7.0	18.4	29.0	41.0	52.2	3.1	14.2	22 35 40.70	310 4 16.4	17.0	18.8	22.8	18.75	. .	30.520	47.0	37.0	
	33	Saturn, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	"	"	"	"	"	39.640	"	"	"	
	34	α Piscis Australis	0.3	13.4	25.9	38.9	51.4	4.2	17.0	22 49 38.73	290 43 21.4	21.6	23.2	26.6	23.20	. .	30.516	46.8	36.2	
	35	α Andromedæ	21.4	34.0	45.9	58.5	11.0	23.3	35.9	0 0 58.57	349 21 44.7	46.1	43.4	49.2	45.85	. .	30.510	44.8	35.3	
	36	γ Pegasi	16.1	28.2	39.3	50.4	2.0	13.4	24.1	0 5 50.50	335 27 10.4	12.8	12.6	17.6	13.35	. .	30.508	44.7	35.1	
	37	α Cassiopeiæ	24.0	43.8	3.0	22.8	41.9	1.5	21.0	0 32 22.57	16 48 22.2	16.5	17.3	23.2	19.80	. .	30.508	44.2	35.5	
	38	δ Polaris	24.0								49 35 31.3	22.5	26.4	31.5	27.92	. .	30.498	43.6	35.9	
	39			29.0							20.0	11.1	15.0	20.5	16.65	. .				
	40				25.0						12.7	2.7	7.6	13.4	9.10	. .	30.500	43.0	35.9	
	41					25.0				1 6 23.34	12.3	1.4	7.2	12.5	8.35	. .				
	42						19.0				12.3	3.8	8.1	13.9	9.52	. .	30.500	42.8	35.3	
	43							21.0			21.9	13.0	16.8	22.5	18.55	. .				
	44								20.0		34.2	26.3	28.9	35.1	31.12	. .	30.496	42.5	35.2	
	†45	α Arietis	27.2	39.3	51.0	2.8	14.7	26.4	38.8	1 59 2.89	343 51 6.9	6.3	8.4	11.6	8.30	. .	30.476	42.0	37.2	
	†46	γ Ceti	18.4	29.8	40.4	51.4	2.3	13.7	24.7	2 35 51.53	. . .	.	.	.	.	. .				
	†47	Venus, 2d & N. L.	52.1	3.2	14.1	25.2	36.0	47.1	58.0	12 5 25.10	317 45 56.1	59.0	61.1	63.7	59.97	. .	30.470	40.8	40.2	
	48	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	"	"	"	"	"	39.852	"	"	"	
	49								33.0		52 34 46.9	34.8	38.9	45.8	41.60	. .	30.476	42.5	44.1	
	50							32.0			60.0	46.9	50.9	58.0	53.95	. .				
	51						34.0				66.3	54.0	58.8	64.7	60.95	. .	30.476	43.0	44.7	
	†52	Polaris, S. P.				29.0				13 5 31.08	69.5	56.9	62.4	68.7	64.38	. .				

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	c.	Error of Runs.	Mic. coin. At		1 rev. = 34″.406
h.	s.	s.	s.	s.	″	h.	revs.	
Oct. 28,	. .	g 0.040	—0.286	—0.293	—0.68	15	40.127	
					—0.68	12	.139	
29, 23	f 24.42	.030				15	.139	

Assumed Latitude 38° 53′ 39″.25 North.

No. for ref.	COR. IN Æ. Clock.	COR. IN Æ. Inst.	COR. IN DEC. Inst.	COR. IN DEC. Object.	Corrected Reading.	Zenith Point.	OBSERVED R. A.	OBSERVED DEC.	REDUCTION TO 1850.0. R. A.	REDUCTION TO 1850.0. DEC.	NADIR POINT. A.	B.	C.	D.	Mean.
	s.	M. s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″					° ′
1	— 22.46	— 0 0.35	. .	. .	. . .	. .	22 33 53.33	. . . .	+ 5.64		Oct.	28.		(Mu.)	179 59
2	22.47	.17	+ 0 0.22	— 2 40.50	290 4. 43.01	1.41	22 49 14.00	— 30 25 39.15	6.64	+40.22					
3	23.47	.38	. .	. .	. . .	. .	22 57 12.05	. . . .	5.46		63″6	62″8	50″5	64″8	62″35
4	22.53	.38	.04	— 0 28.04	335 26 47.52	. .	0 5 25.55	+ 14 20 25.36	5.40	34.14	63.8	63.2	61.0	65.2	63.30
5	22.54	— .96	+ .05	+ 18.58	16 48 38.63	. .	0 31 57.27	+ 55 42 16.47	+ 4.33	32.60	63.5	63.3	60.3	65.5	63.15
6						. .					63.5	63.1	60.2	65.2	63.00
7	. .	. .	— 9.39	1 12.19	49 36 16.82	. .					62.8	62.8	59.4	65.0	62.50
8	. .	. .	2.27	1 12.16	17.26	. .									
9	22.56	+ 47.47	0.16	1 12.16	18.15	. .	1 5 39.58	+ 88 29 55.22	— 31.27	37.21	63.28	63.04	60.08	65.14	62.86
10	. .	. .	10.83	1 12.18	17.75	. .									
11	. .	. .	— 23.61	+ 1 12.22	16.93	. .									
12	23.00	— 0.27	+ 0.13	— 0 38.13	317 29 58.01	2.86	12 2 54.72	— 3 36 49.67							
13			— 48.46	— 39.39	317 29 8.42										
14	. .	. .	+ 23.35	+ 1 17.69	52 36 21.24	. .									
15	. .	. .	— 0.16	1 17.71	20.55	. .						Oct. 29	14h.5	(M.)	179 59
16	23.04	3 48.91	+ 2.05	1 17.65	21.45	. .	13 5 29.75	+ 88 30 1.97	— 31.20	+32.03	61.8	62.4	58.9	63.1	61.55
17						. .					61.6	62.7	58.1	62.1	61.13
18	23.12	. .	21.59	+ 1 17.62	23.33	. .					61.1	61.9	58.2	62.4	60.90
19	23.12	0 0.23	+14 28.19	— 1 9.93	308 17 25.01	. .	14 9 34.39	— 13 5 10.13			60.9	62.1	57.2	61.8	60.50
20			—17 53.81	1 11.37	307 45 1.47						60.8	62.0	56.5	62.0	60.32
21	23.98	.28	0 0.03	0 38.26	317 38 10.83	0.66	12 3 52.36	— 3 28 33.64			61.2	61.7	56.8	62.0	60.43
22			— 44.85	39.56	317 37 24.71						61.2	62.0	57.1	61.9	60.55
23	24.16	.24	+14 28.02	1 10.06	307 57 11.14	. .	14 13 26.17	— 13 25 14.71			60.7	61.9	57.0	62.2	60.45
24			—17 51.51	— 1 11.06	307 24 14.71						61.3	62.0	56.6	62.0	60.47
25	24.21	.20	0 0.11	+ 1 40.69	298 57 41.35	. .	15 39 44.35	— 22 8 40.06			61.1	61.7	56.5	61.8	60.28
26	24.31	.31	— .12	— 0 43.49	323 55 34.36	. .	19 17 48.98	+ 2 49 12.95	+ 6.91	— 1.40	61.17	62.04	57.29	61.13	60.66
27	24.32	.35	+ .17	32.64	331 21 26.33	. .	19 39 1.30	+ 10 15 4.92	6.40	+ 0.03					
28	24.33	— .33	+ .02	38.62	327 8 28.32	. .	19 47 50.10	+ 6 2 6.91	6.57	1.94					
29	24.34	+ 11.05	— .12	1 14.69	307 25 1.84	. .	20 18 23.56	— 13 41 19.57							
30	24.38	— 0.35	+ .10	0 34.57	330 17 24.58	1.82	21 36 42.96	+ 9 11 2.01	5.91	20.26					
31	24.40	.24	.12	1 16.60	303 14 19.23	. .	22 0 6.10	— 12 52 3.15							
32	24.41	.25	+ .22	1 11.52	310 2 53.62	. .	22 35 16.64	— 11 3 23.71				Oct. 29	Night	(M.)	180 0
33			— 13.82	1 11.53	310 3 7.45										
34	34.42	.17	+ 0 .23	2 39.66	290 40 43.77	. .	22 49 14.14	— 30 25 38.80	6.67	40.50	1.0	3.6	0.9	3.5	2.25
35	24.46	.49	.13	0 11.47	349 21 34.51	. .	0 0 33.62	+ 28 15 11.93	5.15	31.39	1.0	3.2	0.1	2.4	1.68
36	24.46	.38	.04	27.89	335 26 45.50	. .	0 5 25.66	+ 14 20 22.95	5.41	34.07	1.3	2.9	0.8	2.5	1.87
37	24.47	.96	+ .06	— 18.43	16 48 38.29	. .	0 31 57.14	+ 55 42 15.72	+ 4.35	32.09	0.8	2.4	0.4	3.2	1.70
38	. .	. .	— 21.72	+ 1 11.52	49 36 17.72	. .					1.0	2.3	0.3	2.8	1.60
39	. .	. .	9.40	1 11.51	18.76	. .					1.02	2.88	0.50	2.88	1.82
40	. .	. .	2.32	1 11.51	18.29	. .									
41	24.49	22.09	0.15	1 11.55	19.75	. .	1 5 36.76	+ 88 29 56.17	— 30.91	36.48					
42	. .	. .	2.94	1 11.58	18.16	. .									
43	. .	. .	10.80	1 11.60	19.35	. .									
44	. .	. .	23.61	+ 1 11.62	19.13	. .									
45	24.52	0.44	+ 0.02	— 0 17.60	343 50 50.72	. .	1 58 37.93	+ 22 44 28.15	+ 5.62	34.47		Oct. 30	Day,	(M.)	179 59
46	24.57	.31	. .	. .	. . .	. .	2 35 26.65	. . . .	+ 5.35						
47	24.82	— .28	+ .17	37.61	317 45 22.53	. .	12 4 58.47	— 3 21 22.99			60.4	62.4	57.0	62.7	60.63
48			44.38	— 38.97	317 44 36.62						60.9	63.2	58.5	62.9	61.37
49	. .	. .	23.34	+ 1 18.14	52 36 23.08	. .					59.6	60.7	57.0	61.1	59.60
50	. .	. .	10.51	1 18.17	22.63	. .					58.9	60.4	56.2	61.0	59.13
51	. .	. .	2.67	1 18.18	21.80	. .					58.7	60.4	55.3	60.0	58.60
52	— 24.85	+ 22.11	+ 0.21	+ 1 18.36	22.95	. .	1 5 28.34	+ 88 29 59.70	— 30.78	+36.30	59.70	61.42	56.80	61.54	59.87

No.	Object.	COR. IN Æ. Semi-Diam.	Observed Semi-diam. Hor.	Vert.
		M. s.	M. s.	′ ″
12	Venus .	— 0 1.58	. . .	0 24.80
19	Sun . .	— 1 6.43	. . .	16 11.77
21	Venus .	— 0 1.55	. . .	0 23.06
23	Sun . .	. . .	1 6.61	16 10.43
32	Saturn .	+ 0 0.60	. . .	0 8.59
47	Venus .	— 0 1.53	. . .	0 22.95

4, 25, 31. Unsteady. 25. Very faint.
12. +1″.22 applied for defective illumination.
21. +1″.29 " " "
29. Scarcely perceptible; through haze.
30, 45, 46. Very unsteady; through mist.
47. +1″.33 applied for defective illumination.
52. Twirling; division under Mic. C. indistinct.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Oct. 29	1	Polaris			33.0						52 35 66.5	55.9	61.8	66.0	62.55	. .	30.470	44.1	45.9	M.
	2			26.0								61.9	48.9	51.4	61.7	55.98	. .			
	3		31.0									47.4	35.3	39.9	48.4	42.75	. .	30.470	44.2	46.5	
Nov. 1	†4	*a* Bootis	32.2	44.2	55.5	6.3	19.2	30.6	42.3	14 9 7.19	. . .	. .	. .	. .	. .	. .				
	5	Venus, S. L.	..	..	..	..	..	..	..	. . .	308 0 15.5	17.1	20.2	21.1	18.47	. .	30.138	54.0	53.8	
	†6	Venus, N. L. (Mic.)	..	..	..	..	..	..	..	. . .		"	"	"	"	41.409	"	"	"	
	7							34.0				. .	. .	. .	. .	. .				
	8						34.0				52 35 70.8	61.4	62.7	69.2	66.02	. .	30.138	55.0	57.5	
	†9	Polaris, S. P.				31.0				13 9 0.83		73.1	61.2	66.1	72.5	68.23	. .			
	10				29.5							70.9	61.5	64.5	70.4	66.82	. .	30.140	56.5	58.8	
	11			26.0								63.3	51.0	55.4	62.8	58.12	. .			
	12		30.5									51.6	39.6	43.5	51.3	46.50	. .	30.138	56.5	59.2	
2	†13	Sun, 1st & N. L. (Mic.)	47.0	59.0	10.2	21.5	32.4	44.3	55.7	14 28 21.30	306 25 60.9	59.4	62.8	66.8	62.47	40.133	30.101	59.2	63.0	
	14	Sun, 2d & S. L. (Mic.)	1.5	13.0	24.2	35.7	47.1	58.3	9.9	14 30 35.67		"	"	"	"	34.303	"	"	"	
	†15	Mercury, 1st & N. L.	..	..	..	..	26.1	39.2	51.0	16 0 38.76	297 46 26.5	26.8	27.4	31.3	28.00*d*	. .	30.070	60.0	66.5	
	16	Mercury, S. L. (Mic.)	..	..	..	..	..	..	..	. . .		"	"	"	"	39.950	"	"	"	
	17	*γ* Aquilæ	52.3	3.4	14.5	25.5	36.8	48.0	59.1	19 39 25.67	331 21 54.2	56.5	53.5	58.5	55.67	. .	30.046	60.2	60.5	
	18	*a* Aquilæ	..	23.5	34.4	46.0	56.9	8.0	19.2	19 43 51.33	329 35 21.4	23.8	22.5	26.5	23.55	. .	30.045	60.1	60.4	
	19	*β* Aquilæ	41.4	52.7	3.5	14.6	25.7	36.4	47.2	19 48 14.50	327 9 1.4	5.7	5.0	9.0	5.27	. .	30.044	60.0	60.2	
	20	a^2 Capricorni	37.0	48.1	59.4	1.0	12.0	23.4	34.2	20 10 0.73	. . .	. .	. .	. .	. .	. .				
	21	Weisse XX, 545 (Mic. 3)	..	..	..	..	24.5	36.0	47.4	20 22 35.97	307 38 40.0	42.7	44.7	47.0	43.60	45.440	30.046	60.4	61.3	
	22	Iris, . . . (Mic. 4)	..	52.0	3.0	14.3	25.0	..	48.5	20 24 16.56		"	"	"	"	40.401	30.046	60.6	61.2	
	23	*a* Andromedæ	20.4	33.2	45.0	57.6	10.0	22.7	35.0	0 0 57.70	349 21 43.4	44.8	42.0	47.1	44.33	. .	30.042	57.5	50.0	
	24	*γ* Pegasi	16.0	27.4	38.8	49.7	1.1	12.8	24.0	0 5 49.97	335 27 8.2	10.8	11.2	15.4	11.15	. .	30.042	57.5	50.0	
	25		40.0								49 35 35.6	26.8	29.3	36.7	32.10	. .	30.036	57.4	49.2	
	†26			45.0								24.8	17.1	19.4	26.4	21.92	. .	30.036	57.4	49.2	
	27				38.0							18.8	7.8	14.0	19.3	14.97	. .			
	28	Polaris				39.0				1 5 38.29		15.9	7.7	12.0	17.7	13.32	. .	30.032	56.0	49.7	
	†29						36.0					18.8	9.6	14.2	20.0	15.65	. .			
	30							35.0				23.8	16.2	19.8	25.5	21.32	. .			
	31								35.0			36.3	27.0	29.8	37.0	32.53	. .	30.030	56.0	50.0	
	32	*a* Arietis	27.0	39.0	50.2	2.5	14.3	26.1	38.0	1 59 2.44	343 51 4.3	9.4	4.3	6.8	6.20	. .	30.022	55.7	49.0	
	†33	Venus, 2d & N. L.	27.3	38.5	49.5	0.5	11.5	22.5	33.5	12 12 60.43	318 3 55.5	56.9	56.0	60.8	57.30	. .	29.960	56.1	54.1	Mu.
	†34	Venus, S. L. (Mic.)	..	..	..	..	..	..	..	. . .		"	"	"	"	38.882	"	"	"	
3	35	*ζ* Pegasi	45.0	56.2	7.2	18.5	29.0	41.0	52.5	22 34 18.49	331 9 26.8	27.2	26.8	30.5	27.82	. .	29.856	62.0	57.0	
	36	*a* Piscis Aust.	1.5	14.2	27.2	39.5	52.5	4.8	17.8	22 49 39.64	290 43 10.0	9.8	11.1	12.1	10.75	. .	29.856	61.9	56.3	
	37	*ι* Piscium	0.8	12.0	23.5	34.2	45.0	56.0	7.0	23 32 34.07	325 55 14.6	16.9	16.5	20.5	17.12	. .	29.856	61.3	55.1	
	38	*a* Andromedæ	21.1	34.0	46.3	58.5	11.0	23.5	36.0	0 0 58.63	349 21 49.3	49.9	48.2	52.0	49.85	. .	29.856	61.0	54.0	
4	39	Sun, 1st & N. L. (Mic.6)	41.0	53.2	4.2	15.8	26.7	38.4	49.5	14 36 15.54	305 48 17.5	19.5	19.4	24.9	20.32	40.141	29.916	67.0	69.0	M.
	†40	Sun, 2d & S. L. (Mic. 2)	..	7.2	18.4	30.0	40.9	53.0	4.0	14 38 35.58		"	"	"	"	34.474	29.914	67.4	69.3	
	†41	*a* Aquilæ	..	..	36.0	47.0	58.2	9.2	20.0	19 43 47.01	. . .	. .	. .	. .	. .	. .				
	†42	*β* Aquilæ	..	..	..	16.0	27.0	38.0	49.0	19 48 32.50	327 9 0.7	3.7	5.1	6.7	4.05	. .	29.892	68.0	66.2	
	43	Weisse XX, 779 (Mic.)	16.0	27.2	38.2	49.2	0.2	11.8	22.9	20 30 49.36	307 57 1.5	3.8	7.0	9.8	5.52	39.150	29.894	67.3	63.6	
	†44	Venus, 2d & S. L.	56.7	8.1	18.4	29.7	40.1	51.8	3.0	12 14 29.69	318 3 11.8	13.1	14.2	18.0	14.28	. .	29.996	59.5	57.9	
	†45	Venus, N. L. (Mic.)	..	..	..	..	..	..	..	. . .		"	"	"	"	41.324	"	"	"	
5	46	*a* Cygni	56.0	11.5	26.5	42.0	57.5	12.5	28.0	20 56 41.97	5 51 0.7	1.7	2.6	9.9	3.72	. .	30.020	60.9	53.3	Mu.
	47	*a* Pegasi	6.0	17.0	28.5	39.5	51.5	2.0	13.8	22 57 39.76	335 30 18.0	22.0	20.3	24.0	21.08	. .	30.072	56.5	48.2	
	48	*ι* Piscium	3.0	14.2	25.0	36.0	47.0	58.0	9.0	23 32 36.03	328 55 18.2	20.5	20.9	23.5	20.77	. .	30.078	55.2	47.3	
	49	*a* Andromedæ	23.8	36.0	48.2	1.0	13.5	27.0	39.2	0 1 1.24	349 21 51.9	51.9	49.2	55.1	52.02	. .	30.082	54.8	47.2	
	†50		39.0								49 35 40.2	32.0	34.5	38.8	36.38	. .				
	51			44.0								26.9	17.0	20.0	26.4	22.58	. .			
	52	Polaris			40.0							18.6	9.4	14.9	19.5	15.60	. .	30.084	53.0	46.2	

DATE.	CLOCK +*m*.	Hourly Rate.	VALUE OF *n*.	VALUE OF *c*.	Error of Runs.	Mic. coin. At	Mic. coin.	1 rev. = 34″.406
h.	s.	s.	s.	s.	″	h.	revs.	
Nov. 1,		*g* 0.000	—0.286	—0.293		14	40.133	
2, 20	*f* 24.49	.024	+0.397	+ .038	— .98	4	.130	
1	24.63	.024				12	.123	
3, 23	25.47	.038			.28	22	.123	
4, 20	26.04	.040			.70	15	.141	
5, 23	27.85	.050			— .28			

13. Wire IV recorded 20*s*.5
20. Wires III, IV recorded 58*s*.4, 0*s*.0
34. Mic. recorded 39.882

Nov. 1, 14*h*. Adjusted for level.
2. 15. Adjusted for collimation.

Assumed Latitude 38° 53′ 39″.25 North

COR. IN Æ.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					°
. .	. .	+ 0 2.15	+ 1 18.35	52 36 23.05	. .					Nov.	2,	15h.	(M.)	179
. .	. .	9.25	1 18.44	23.67	. .					58″9	60″2	55″8	60″4	58″8
. .	. .	21.71	+ 1 18.43	22.89	. .					58.7	60.3	55.2	59.8	58.5
— 24.88	— 0 0.42	. .	. . .	. . . .	. .	14 8 41.89		+ 7.42		59.0	60.2	56.1	59.5	58.7
. .	. .	0.11	— 0 37.22	317 39 41.36	59.00					60.0	61.5	56.4	60.5	59.6
. .	. .	44.02	— 35.78	318 0 26.71			— 3 6 15.82			59.8	61.4	56.2	60.1	59.3
. .	. .	. .	. . .	. . . .	. .					59.28	60.72	55.44	60.06	59.6
. .	. .	+ 2.37	+ 1 15.25	52 36 23.64	. .									
24.33	3 7.48	— 0.38	1 15.23	23.08	. .									
. .	. .	+ 1.82	1 15.05	23.69	. .	13 5 29.02	+ 88 29 56.75	— 29.90	+35.22					
. .	. .	8.92	1 14.87	21.91	. .									
. .	. .	21.20	+ 1 14.96	22.66	. .									
										Nov.	2,	22h.	(M.)	179
24.36	0 0.23	+14 27.88	— 1 9.45	306 39 20.90	. .	14 29 3.89	— 14 43 14.15			59.0	60.5	57.3	59.9	59.1
		—18 1.24	1 10.92	306 6 50.31						58.7	60.2	57.2	59.4	58.8
24.37	— 24.06	+ 0 0.00	1 39.84	297 44 48.26	. .	15 59 50.55	— 23 21 34.65			57.3	59.4	56.0	59.5	58.6
		— 6.30	1 39.75	297 44 41.95						58.5	60.7	57.0	61.0	59.3
24.49	+ 0.11	+ 0.20	0 31.20	331 21 24.67	. .	19 39 1.29	+ 10 15 4.92	+ 6.46	0.27	58.7	59.8	56.2	60.1	58.7
24.49	— 5.45	.20	33.54	329 34 49.81	. .	19 43 21.39	+ 8 28 30.06	6.60	2.43	58.0	60.5	56.1	59.9	58.6
24.49	+ 0.08	+ .03	36.90	327 8 28.30	. .	19 47 59.99	+ 6 2 8.65	6.63	2.16	58.37	60.18	56.63	59.97	58.7
24.50	— .05	. .	. . .	. . . .	. .	20 9 36.18	. . . .	7.44						
24.50	22.57	— 2 53.38	1 13.95	307 34 36.27	. .	20 21 48.90	— 13 31 43.48	7.38	15.92					
24.50	— 2.32	+ 0 9.22	1 10.29	307 37 42.53	. .	20 23 49.74	— 13 28 37.22							
24.60	+ 0.25	0.24	0 10.96	349 21 33.61	. .	0 0 33.35	+ 28 15 14.07	5.18	31.00					
24.60	.14	+ .06	— 26.63	335 26 44.58	. .	0 5 25.51	+ 15 20 25.04	+ 5.43	33.95					
. .	. .	— 23.34	+ 1 8.50	49 36 17.26	. .					Nov.	3,	Noon.	(Mu.)	179
. .	. .	10.51	1 8.47	19.88	. .					60.9	61.9	57.4	60.8	60.2
. .	. .	3.23	1 8.44	20.18	. .					60.3	60.9	55.9	60.9	59.5
24.63	16.60	0.25	1 8.42	21.49	. .	1 5 30.26	+ 88 30 0.32	— 29.74	35.04	59.5	60.0	55.9	59.9	58.8
. .	. .	2.55	1 8.41	21.51	. .					59.5	60.2	55.0	59.9	58.6
. .	. .	9.83	1 8.39	19.88	. .					59.5	59.0	54.9	59.9	58.3
. .	. .	22.08	+ 1 8.39	18.84	. .					59.94	60.40	55.80	60.28	59.1
24.65	0.20	— 0.03	— 0 16.91	343 50 49.32	. .	1 58 37.99	+ 22 44 29.78	+ 5.60	34.14					
		+ .09	35.32	318 3 22.07										
25.13	.02	— 42.59	36.77	318 2 37.96	59.10	12 12 33.89	— 3 3 19.84							
25.46	+ .11	+ 0.04	32.20	331 8 55.66	60.16	22 33 53.14	+ 10 2 34.75	5.73	27.49					
25.47	— .19	— .08	2 30.06	290 40 40.61	. .	22 49 13.98	— 30 24 40.30	6.75	41.15	Nov.	3,		(Mu.)	179
25.49	+ .07	+ .12	0 38.80	325 54 38.44	. .	23 32 8.65	+ 4 48 17.53	5.72	33.16	60.4	61.0	57.0	62.0	60.1
25.50	+ .25	.08	10.80	349 21 39.17	. .	0 0 33.38	+ 28 15 18.26	5.19	30.90	60.5	51.4	57.5	62.0	60.3
	— .07	+14 28.27	1 9.74	306 1 38.85	. .					60.0	60.9	57.5	61.7	60.0
25.82	5.78	—17 55.24	1 11.17	305 29 13.91	. .	14 36 56.81	— 15 20 54.49			60.0	61.3	57.1	61.9	60.0
26.03	10.97	. .	. . .	. . . .	. .	19 43 21.08	. . . .	6.64		60.6	61.0	57.4	62.0	60.2
26.03	16.44	0 0.02	0 36.27	327 8 27.80	. .	19 47 50.03	+ 6 2 6.93	6.66	2.28	60.30	61.12	57.30	61.92	60.1
26.06	— 0.05	— 34.08	1 12.31	307 55 19.13	. .	20 30 23.25	— 13 11 1.53	7.33	17.39					
27.31	+ .02	+ 0.06	0 37.17	318 5 37.17	. .	12 14 1.11	— 3 0 22.61							
		40.76	— 38.70	318 6 19.34										
27.73	.45	0.01	+ 5.93	5 51 9.66	63.10	20 36 14.69	+ 44 44 45.81	4.18	1.94	Nov	4,	15h.	(M.)	179
27.85	.14	.03	— 26.70	335 29 54.40	. .	22 57 12.05	+ 14 23 30.55	5.56	28.70	60.4	61.0	57.6	61.3	60.0
27.87	.07	.12	39.70	325 54 41.19	. .	23 32 8.23	+ 4 48 17.34	5.73	33.24	61.7	61.4	57.1	60.7	60.2
— 27.91	+ .25	+ .08	— 11.03	349 21 41.07	. .	0 0 33.58	+ 28 15 17.22	+ 5.21	30.73	61.2	61.9	57.1	61.2	60.3
. .	. .	— 23.28	+ 1 9.04	49 36 22.14	. .					60.2	61.7	57.2	60.8	59.9
. .	. .	10.34	1 9.04	21.28	. .					60.4	61.7	57.7	61.7	60.3
. .	. .	— 2.67	+ 1 9.06	21.99	. .					60.78	61.54	57.34	61.14	60.2

No.	Object.	COR IN Æ. Semi-Diam.	Observed Semi-Diam. Hor.	Vert.
		m. s.	m. s.	′ ″
5	Venus .	— . . .	. . .	0 22.67
13	Sun . .	. . .	1 7.18	
15	Mercury	+ 0.22	. . .	3.15
33	Venus .	— 1.43	. . .	22.06
39	Sun . .	. . .	1 7.16	16 12.47
44	Venus .	— 1.30	. . .	0 21.10

4. Unsteady.
6. + 1″.42 applied for def. ill'n.
15. Very faint.
33. + 1″.44 applied for def ill'n.
45. + 1″.47 applied for def. ill'n.

1851	No.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean	Mic.	Barometer.	THER'S At.	THER'S Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Nov. 4	1	Polaris				45.0				1 5 39.00							30.086	52.9	46.0	Mu.
	2						35.0				49 35 18.8	9.8	13.8	20.2	15.65					
	3							36.0				24.2	16.8	19.9	26.9	21.95		30.088	52.3	46.0
	4								34.0			37.8	28.6	31.2	38.1	33.93		30.074	51.8	46.0
	5	α Arietis	30.0	42.0	54.0	6.0	17.5	29.8	41.5	1 59 5.83	343 51 10.8	10.2	7.2	16.0	11.05					
	6	Mars, 1st L.	23.0	..	46.2	..	8.0	..	30.0	2 13 56.80										
	7	Mars, 2d L.	..	36.5	..	59.0	..	21.0	..	2 13 58.83										
	8	α Persei	8.5	25.5	42.2	59.2	16.0	33.0	49.5	3 13 59.13	10 24 61.2	56.1	58.0	64.9	60.05		30.084	50.5	44.1	
6	†9	Sun, 1st L.	40.1	51.9	3.4	14.5	26.1	37.5	49.6	14 44 14.73										M.
	†10	Sun, 2d L.	55.2	7.0	18.4	29.3	41.2	52.2	4.1	14 46 29.63										
	11	α Lyræ	31.8	46.3	0.4	14.7	28.4	42.5	56.8	18 32 14.42										
	12	α Aquilæ	16.2	27.4	38.5	49.6	0.5	11.4	23.0	19 43 49.53										
	13	β Aquilæ	45.2	56.3	7.0	18.1	29.0	40.2	50.9	19 48 18.10										
11	14	61¹ Cygni	54.2	8.2	22.0	36.2	50.0	3.8	18.0	21 0 36.06	359 4 62.4	61.7	59.2	63.9	61.80		20.390	56.5	48.1	Mu.
	15	β Cephei	36.5	8.5	40.0	12.0	44.0	16.0	48.0	21 27 12.14	30 59 52.3	43.9	45.2	51.2	48.15		30.306	55.9	46.0	
	16	Weisse XXI, 1398	23.2	34.8	46.0	57.0	8.0	19.0	30.5	22 0 56.93	308 47 24.3	28.9	28.7	31.5	28.35		30.306	54.5	44.2	
	17	Saturn, 1st & N. L.	48.0	..	10.2	..	..	..	54.0	22 35 17.40	310 3 37.5	32.9	37.0	41.4	37.20		30.305	52.5	42.3	
	18	Saturn, 2d & S.L. (Mic.)	..	0.5	..	23.5	..	43.0	..	22 35 22.33		"	"	"	"	39.564	"	"	"	
	19	ι Piscium	6.8	18.0	29.0	40.0	51.0	2.0	13.0	23 32 39.97	325 55 16.3	20.4	20.0	23.2	19.97		30.310	50.4	40.7	
	20	α Andromedæ	27.3	40.0	52.0	5.0	17.8	30.0	42.0	0 1 4.87	349 21 47.8	50.3	47.8	53.9	49.95		30.314	49.4	40.3	
	21	α Cassiopeiæ	29.5	49.5	8.5	28.5	47.5	7.5	26.5	0 32 28.21	16 48 24.8	20.0	20.2	26.6	22.90		30.330	48.8	39.9	
	22	Polaris	40.0								49 35 39.6	29.8	32.5	38.7	35.15		30.334	47.9	40.8	
	23				43.0						17.5	7.3	12.4	16.4	13.40					
	24					43.0				1 8 0.00	13.6	5.8	7.6	13.5	10.12		30.334	47.9	40.8	
	25						37.0				14.8	6.3	9.2	14.5	11.20					
	26							37.0			21.4	12.5	16.2	22.8	18.28		30.336	47.3	40.3	
	27								40.0		34.8	27.3	29.0	36.5	31.90		30.338	47.0	40.1	
	28	α Arietis	34.0	46.0	57.5	9.8	21.3	33.4	45.0	1 59 9.57										
	29	η Tauri	24.5	36.5	48.2	1.0	12.5	24.5	36.5	3 39 0.53										
	30	γ¹ Eridani	55.0	6.5	17.8	29.0	40.0	..	3.0	3 51 25.22	307 10 58.2	60.5	64.7	68.4	62.95					
16	†31	Moon. 1st & S.L. (Mic. 2)	50.5	1.2	13.0	24.0	35.1	47.0	58.0	22 42 24.11	314 57 19.8	27.5	23.8	26.8	24.48	37.688	30.252	52.2	45.0	M.
	†32	α Andromedæ	32.2	45.0	57.0	9.2	21.4	34.6	46.7	0 1 9.44										
	†33	γ Pegasi	28.0	39.3	50.0	2.0	13.2	24.0	34.8	0 6 1.61										
	†34	α Arietis	38.2	50.3	2.4	14.2	26.3	38.2	50.2	1 59 14.26										
	35	Mars, 1st L.	12.2	24.0	35.2	46.1	57.4	10.2	20.2	2 1 46.47										
	36	γ Ceti	30.2	41.2	52.6	3.1	14.6	25.0	36.1	2 36 3.23										
17	37	Saturn, 1st & N. L.	53.2	..	16.0	..	38.0	..	0.5	22 35 26.92	310 5 27.2	31.3	28.0	33.2	29.92		30.202	55.5	51.5	Mu.
	38	Saturn, 2d & S.L. (Mic.)	..	6.0	..	28.5	..	50.5	..	22 35 28.33		"	"	"	"	39.603	"	"	"	
	39	α Piscis Australis	14.0	27.5	39.5	52.3	5.0	17.5	30.5	22 49 52.33	290 43 13.7	15.9	14.0	17.8	15.35		30.200	56.0	53.6	
	40	Moon, 1st L.	19.5	31.5	42.2	54.2	5.0	16.0	27.3	23 39 53.67							30.194	55.8	52.9	
	41	α Andromedæ	34.0	46.2	58.5	11.0	23.0	36.0	48.5	0 1 11.03	349 21 51.2	57.0	49.9	55.4	53.37		30.194	56.0	52.0	
	42	Polaris	33.0								49 35 43.4	40.5	39.5	45.2	42.15		30.188	55.2	51.6	
	43			43.0							29.2	25.5	24.4	30.0	27.28					
	44				37.0						22.1	22.4	18.8	24.1	21.85		30.188	55.5	51.5	
	45					43.0				1 5 39.43	19.1	12.2	15.7	18.1	16.28					
	46						37.0				19.8	15.4	14.2	24.4	18.45		30.186	55.5	51.5	
	47							42.0			23.9	19.0	20.0	25.7	22.65					
	48								41.0		37.9	31.3	31.5	38.0	34.66		30.184	55.0	51.0	
	49	Mars, 1st & N. L.	28.0	..	51.0	..	13.0	..	36.5	2 1 3.12	333 17 14.5	18.2	15.8	23.0	17.87		30.182	55.0	51.0	
	50	Mars, 2d & S.L. (Mic.)	..	40.5	..	3.0	..	24.0	..	2 1 2.50		"	"	"	"	39.476	"	"	"	
	51	γ Ceti	31.8	42.8	53.8	5.0	16.8	26.8	38.0	2 36 4.89	323 42 30.0	36.4	31.6	46.0	36.00		30.078	54.0	50.6	
	52	α Ceti	26.3	37.5	48.3	59.0	10.5	21.5	32.3	2 54 59.34	324 36 21.6	30.0	26.4	29.5	26.87		30.176	53.5	50.4	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.	1 rev. = 34″.406
h.	s.	s	s.	s.	″	h.	revs.	
Nov. 6, 19	f 28.43	g 0.045	+0.397	+0.038	. .	15	40.147	
11, 0	31.77	.020			+ 0.05	23	.138	
" 3	31.83	.020						
16, 1	36.47	.060				23	.129	
17, 3	38.12	.060			— 0.68	23	.139	

Assumed Latitude 38° 53′ 39″.25 North.

COR IN Æ.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B	C.	D.	Mean.
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					° ′
— 27.96	+ 0 16.60	. . .	. . .	. . .	63.10	1 5 27.64	+ 88 29 57.97	— 28.94	+33.98		Nov. 4	Night.	(M.)	179 59
. .	. .	— 0 2.18	+ 1 9.06	49 36 22.53	. .					60″4	60″8	58″2	61″4	60″20
. .	. .	9.48	1 9.07	21.54	. .					59.6	60.9	58.6	61.4	60.13
. .	. .	— 21.53	+ 1 9.05	21.45	. .					59.8	60.4	58.0	60.9	59.78
28.00	0.20	+ 0.02	— 17.06	343 50 54.01	. .	1 58 38.03	+ 22 44 30.16	+ 5.59	33.91	59.9	60.9	58.2	60.7	59.92
	.17									59.2	60.2	57.8	60.9	59.52
28.01	.09	. . .	. . .	. . .	. .	2 13 29.93								
28.06	+ .52	.09	+ 10.87	10 25 11.01	. .	3 13 31.59	+ 49 18 47.16	6.57	32.04	59.78	60.64	58.16	61.06	59.91
28.23	— .07	. . .	. . .	. . .	. .	14 44 53.88								
28.40	+ .36	. . .	. . .	. . .	. .	18 31 46.38	. . . .	5.30						
28.46	.10	. . .	. . .	. . .	. .	19 43 21.17	. . . .	6.67						
28.46	.08	. . .	. . .	. . .	. .	19 47 49.72	. . . .	6.69			Nov. 5		(Mu.)	179 59
31.71	.36	— .01	— 0.95	359 5 0.84	63.32	21 0 4.71	+ 37 58 36.77	5.51	14.14	62.1	63.9	60.1	66.3	63.10
31.72	+ 1.20	.00	+ 35.62	31 0 23.77	. .	21 26 41.62	+ 69 53 59.70	0.36	7.11	62.3	64.8	61.3	66.3	63.68
31.73	— 0.04	+ .02	— 1 13.95	308 46 14.42	. .	22 0 25.16	— 12 20 9.65	6.73	31.15	62.7	63.3	59.9	65.9	62.95
31.74	+ 3.72	+ .01	1 10.29	310 2 26.92	. .	22 34 49.95	— 11 4 7.02			62.7	63.3	59.9	65.9	62.95
	— 0.08	— 19.73	1 10.30	310 2 7.17						62.9	63.4	59.4	65.6	62.83
31.76	+ .07	0.02	0 40.56	325 54 39.39	. .	23 32 8.28	+ 4 48 15 30	5.79	33.42	62.54	63.74	60.12	66.00	63.10
31.77	.25	.01	— 11.28	349 21 38.66	. .	0 0 33.35	+ 28 15 14.59	5.27	30.26					
31.78	+ .66	.01	+ 18.19	16 48 41.08	. .	0 31 57.09	+ 55 42 17.01	+ 4.50	29.10					
. .	. .	23.33	1 10.40	49 36 22.22										
. .	. .	2.74	1 10.34	21.00							Nov. 11,		(Mu.)	180 0
		0.04	1 10.40	20.48										
31.81	— 2 2.54	2.29	1 10.46	19.37	. .	1 5 25.65	+ 88 29 56.38	— 27.52	31.91	2.9	4.5	1.6	5.0	3.50
. .	. .	9.56	1 10.48	19.20						2.9	4.5	1.5	5.1	3.50
. .	. .	— 21.97	+ 1 10.51	20.44						2.9	4.7	1.4	5.2	3.55
31.81	+ 0 0.20	. . .	. . .	. . .	. .	1 58 37.96	. . . .	+ 5.57		2.8	3.0	0.4	5.0	2.80
31.84	.21	. . .	. . .	. . .	. .	3 38 28.90	. . . .	5.83		2.9	3.9	1.2	5.1	3.28
31.84	+ 3.71	+ 0.01	— 1 19.74	307 9 43.22	. .	3 56 57.09	— 13 56 40.85	4.66	24.75	28.8	4.12	1.22	5.08	3.32
36.33	— 0.07	—16 4.36	+57 1.38	315 38 21.50	60.78	22 42 55.04	— 5 28 0.03							
36.41	+ .25	. . .	. . .	. . .	. .	0 0 33.24	. . . .	5.32						
36.41	.14	. . .	. . .	. . .	. .	0 5 25.34	. . . .	5.55						
36.53	.20	. . .	. . .	. . .	. .	1 58 37.93	. . . .	5.57						
36.53	.13	. . .	. . .	. . .	. .	2 1 10.66					Nov. 16,23h.		(M.)	179 59
36.55	+ .06	. . .	. . .	. . .	. .	2 35 26.74	. . . .	5.24		61.3	64.5	57.0	60.0	60.70
37.86	.00	+ 0 0.11	— 1 8.33	310 4 21.70	58.24	22 34 49.72	— 11 2 6.51			61.1	64.8	57.8	60.2	60.98
	— .08	— 18.33	1 8.34	310 4 3.25						60.8	64.8	57.0	60.0	60.65
37.87	— .19	+ 0.27	2 32.65	290 40 42.97	. .	22 49 14.27	— 30 25 36.02	6.97	42.76	60.7	65.0	57.0	60.2	60.72
37.92	+ .04	. . .	. . .	. . .	. .	23 39 23.58				60.9	64.9	57.3	60.4	60.88
37.95	.25	+ 0.22	— 0 10.97	349 21 42.62	. .	0 0 33.33	+ 28 15 23.63	+ 6.33	29.91	60.96	64.80	57.22	60.16	60.79
. .	. .	— 23.82	+ 1 8.54	49 36 26.87	. .									
. .	. .	10.59	1 8.54	25.23	. .									
. .	. .	2.90	1 8.54	27.49	. .									
38.01	16.63	0.09	1 8.53	24.72	. .	1 5 28.05	+ 88 30 5.56	— 24.80	29.96					
. .	. .	2.29	1 8.54	24.70	. .						Nov. 17,		(Mu.)	179 59
. .	. .	9.79	1 8.57	21.43	. .									
. .	. .	21.90	+ 1 8.61	21.38	. .					59.5	55.3	57.1	61.1	58.25
	0.16	0.06	— 0 21.96	333 16 55.85						60.0	54.9	56.7	61.1	58.18
38.06	.08	— 23.40	21.96	333 16 33.10	. .	2 0 24.13	+ 12 10 25.48			60.3	55.0	57.3	61.3	58.47
										59.8	54.7	56.4	61.4	58.08
38.10	.06	+ 0.14	42.96	323 41 53.18	. .	2 35 26.85	+ 2 35 34.19	+ 5.24	33.53					
— 38.12	+ 0 0.06	+ 0 0.27	— 0 41.58	324 35 45.56	. .	2 54 21.28	+ 3 29 26.57	+ 5.26	+31.96	59.90	54.98	56.87	61.22	58.25

Object.	COR. IN Æ.	Observed Semi-diam.	
	Semi-Diam.	Hor.	Vert.
	m. s.	m. s.	′ ″
Mars .	. . .	0 0.97	
Sun . .	. . .	1 7.45	
Saturn .	. . .	0 0.57	0 9.87
Moon .	+ 1 7.43		
Mars .	0 0.59		
Saturn .	. . .	0.66	9.22
Moon .	1 7.79		
Mars .	. . .	0.46	11.38

9, 10. Very unsteady.
31, 32, 33, 34. Through clouds; unsteady.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	H M. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Nov. 17	1	α Persei	18.5	36.0	52.5	9.0	26.5	43.0	0.0	3 14 9.36	10 24 65.5	59.0	60.6	67.5	63.15	. .				Mu
	2	η Tauri	..	43.0	54.5	6.2	18.8	30.8	42.7	3 39 12.67	344 44 24.5	31.8	25.2	30.2	27.92	. .	30.170	53.4	49.8	
20	3	Moon, S. L.	..	..	..	..	..	..	..	. . . .	332 51 53.0	59.5	52.3	56.0	55.20	. .	30.390	39.0	29.9	
26	4	α Bootis	51.4	3.2	15.0	26.7	38.0	50.1	1.0	14 9 26.49	. . . .	. .	. .	. .	. .	. .				M.
27	†5	Sun, 1st & N. L. (Mic. 6)	40.4	53.4	4.2	16.3	28.7	40.1	52.0	16 11 16.44	300 2 14.2	16.2	14.0	19.3	15.92	40.120	30.186	44.5	37.4	
	†6	Sun, 2d & S. L. (Mic. 2)	1.0	13.1	24.7	35.8	48.1	0.0	11.7	16 13 36.34		"	"	"	"	34.232	30.182	44.7	37.6	
	†7	α Lyræ	48.0	2.4	16.1	30.0	44.2	58.2	12.3	18 32 30.17	359 45 22.2	23.8	17.0	21.5	21.12	. .	30.106	46.9	40.5	
	†8	β Cephei	48.7	21.2	52.5	24.4	56.0	28.7	0.2	21 27 24.53	30 59 53.6	47.7	45.4	52.6	49.82	. .	30.070	47.5	39.1	
	†9	ε Pegasi	54.2	5.4	16.1	27.9	38.4	50.0	1.1	21 37 27.59	330 17 53.0	59.0	53.8	58.7	56.12	. .	30.068	47.2	38.8	
	†10	α Aquarii	10.0	20.9	32.2	43.1	53.9	5.2	16.2	21 58 43.07	320 3 51.8	59.8	56.2	59.0	56.70	. .	30.068	46.3	37.2	
29	11	α Lyræ	50.4	4.8	18.3	32.5	46.2	0.7	14.9	18 32 32.54	359 45 20.6	23.4	17.4	21.4	20.70	. .	30.392	33.8	29.5	
	†12	α Cephei	32.2	56.0	19.5	43.0	5.9	29.0	52.4	21 15 42.57	23 2 54.5	52.4	49 2	55.4	52.87	. .	30.442	36.5	26.8	
	†13	β Cephei	50.0	23.0	54.3	26.3	58.3	30.5	2.0	21 27 26.35	30 59 52.0	45.4	42 0	49.5	47.22	. .	30.440	36.5	26.4	
	14	ε Pegasi	56.5	7.2	18.5	29.7	40.6	51.6	2.7	21 37 29.52	330 17 56.1	61.8	57 8	60.0	58.95	. .	30.444	35.8	26.2	
	†15	α Aquarii	12.0	23.2	34.1	45.2	56.2	7.1	18.2	21 58 45.00	320 3 57.6	63.3	61 2	64.3	61.60	. .	30.452	34.3	25.2	
	16	Saturn, 1st & N. L.	15.2	26.5	37.3	48.5	0.0	10.3	22.0	22 36 48.54	310 13 35.0	40.7	38.7	43.4	39.45	. .	30.464	33.5	24.3	
	17	Saturn, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	"	"	"	"	"	39.605	"	"	"	
	18	α Pegasi	24.0	36.1	46.9	58.6	10.2	20.9	32.6	22 57 58.47	335 30 16.4	24.4	18.4	23.7	20.72	. .	30.466	32.9	23.6	
	19	α Andromedæ	42.9	55.4	7.5	20.0	32.4	45.2	57.1	0 1 20.07	349 21 45.7	51.4	44.9	49.5	47.87	. .	30.476	31.2	22.1	
	†20	γ Pegasi	38.2	49.7	1.0	12.1	22.9	35.0	46.0	0 6 12.13	335 27 12.8	19.8	15.8	20.0	17.10	. .	30.476	31.0	22.0	
	†21	α Cassiopeiæ (Mic.)	44.7	4.0	23.5	44.4	2.5	22.5	41.7	0 32 43.33	16 47 61.9	60.0	58.4	62.4	60.67	40.902	30.480	30.7	21.5	
	†22	β Ceti	10.0	21.9	33.1	44.9	56.1	8.0	19.5	0 36 44.79	302 18 40.4	44 5	42.0	45.4	43.07	. .	30.480	30.7	21.4	
	†23	Polaris	47.5								49 35 41.5	35 0	35.3	42.2	38.50	. .	30.482	30.0	22.0	
	24			55.0							27.8	23 2	21.9	28.0	25.22	. .				
	25				47 0						20.4	13 7	14.0	19.5	16.90	. .				
	26					49.5				1 5 47.66	18.7	11 6	11.4	17.7	14.85	. .	30.476	29.2	22.0	
	27						46.0				20.3	14 6	14.2	20.0	17.27	. .				
	28							46.0			27.4	22.8	20.8	26.8	24.45	. .				
	29								43.0		38.6	33.9	33.0	38.0	35.87	. .	30.472	28.0	21.4	
	30	Mars, 1st and N. L.	18.2	29.4	41.9	52.4	4	14.9	26.3	1 54 52.46	333 19 21.0	21.2	26.4	27.0	23.90	. .	30.484	27.0	20.5	
	31	Mars, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .	"	"	"	"	"	39.614	"	"	"	
	32	α Persei	28.5	45.4	2.0	19.1	34.9	52.4	9.4	3 14 18.81	10 24 65.7	63.5	59.0	67.8	64.00	. .	30.506	28.0	18.8	
	33	η Tauri	39.8	52.1	3.2	16.0	27.4	39.5	50.7	3 39 15.53	344 44 24.4	30.0	24.1	29.0	26.87	. .	30.504	26.8	18.4	
	†34	Flora, (Mic. 6)	..	..	..	..	..	10.5	21.0	4 40 15.75	334 52 28.2	35.2	29.4	34.2	31.75	38.570	30.510	25.1	17.3	
	†35	β Tauri	52.5	4.7	17.2	29.1	42.2	54.4	7.4	5 17 29.65	351 19 51.1	54.0	50.5	54.5	52.52	. .	30.504	24.2	16.7	
	36	ε Orionis	45.4	56.0	7.4	18.5	29.0	40.4	51.0	5 29 18.24	319 48 55.4	58.8	60.2	61.3	58.92	. .	30.508	24.2	16.6	
30	37	ι Piscium	..	..	45.5	56.5	7.2	18.2	29.5	23 32 7.38	325 55 14.3	20.5	15.7	20.2	17.67	. .				Mu
	38	α Andromedæ	43.5	56.5	9.2	21.2	34.0	46.0	58.8	0 1 21.31	349 21 44.7	48.8	43.1	48.4	46.25	. .	30.562	30.0	26.0	
	39	α Cassiopeiæ	46.0	5.0	24.0	44.0	3.5	23.0	42.7	0 32 44.03	16 48 31.9	27.9	24.3	31.6	28.92	. .	30.562	30.0	25.5	
	40	α Ceti	37.0	47.8	59.0	9.0	20.7	31.5	42.8	2 55 9.69	324 36 27.5	34.3	36.2	34.8	33.20	. .	30.542	29.0	25.6	
	41	β Tauri	53.0	5.5	18.2	30.8	43.0	55.0	8.0	5 17 30.50	349 34 48.7	49.6	45.7	51.2	48.80	. .	30.500	31.0	25.4	
Dec. 3	42	γ Ceti	43.0	54.0	5.0	15.5	26.0	37.2	48.4	2 36 15.59	323 42 28.3	33.8	31.0	35.4	32.12	. .	29.976	49.4	39.1	M.
	43	α Ceti	37.2	48.4	59.3	10.4	21.2	32.1	43.4	2 55 10.29	324 36 20.5	28.2	24.9	27.7	25.32	. .	29.974	48.2	38.3	
	44	α Persei	30.0	47.2	3.5	20.4	37.0	53.0	11.0	3 14 20.30	10 24 63.4	64.3	58.4	66.2	63.07	. .	29.978	47.4	38.7	
	45	η Tauri	41.7	54.2	6.1	18.1	29.3	41.3	53.4	3 39 17.73	344 44 21.3	26.9	22.3	25.5	24.00	. .	29.986	46.5	36.5	
	†46	α Tauri	..	..	51.0	1.3	13.4	25.0	36.0	4 28 13.34	337 18 32.5	38.5	33.5	40.0	36.12	. .	30.012	45.3	38.9	
	47	β Orionis	31.0	42.2	53.3	4.4	15.2	26.2	37.4	5 8 4.24	312 44 20.7	27.0	25.2	29.1	25.50	. .	30.018	44.8	38.5	
	48	β Tauri	54.2	6.6	19.4	31.5	44.0	56.5	9.0	5 17 31.60	349 34 46.8	48.4	45.3	51.8	48.07	. .	30.026	44.5	38.2	
	49	δ Orionis	32.1	43.0	53.2	5.0	15.4	26.8	37.7	5 25 4.74	320 42 2.2	7.4	4.6	9.3	5.87	. .	30.030	44.4	37.8	
	50	α Columbæ	19.2	32.2	45.4	59.0	..	25.4	..	5 34 48.30	286 59 55.6	59.8	58.0	62.7	59.02	. .	30.036	44.5	38.0	
	51	α Orionis	13.2	24.4	35.4	46.4	57.5	8.8	20.0	5 47 46.53	328 29 16.3	22.0	17.5	22.0	19.45	. .	30.044	44.5	37.4	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.
	h.	s.	s.	s.	″	h.	revs.
Nov. 20,	.	. .	+0.397	+0.038			
26,	.	. .	g 0.050				
27, 19		f 44.80	.040		— .36	17	40.120
29, 23		47.04	.030		+ .10	23	.129
" 4		47.19					
30, 2		48.30	.025		+ .11		
Dec. 3, 4		48.92	.028		— .42		
4, .		. .	.032			17	.124

1 rev. = 34″.406

7. Wire IV recorded 31s.0
15. Wire VI recorded 6s.1
35. Wire I recorded 51s.5

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean.
s.	M. s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″					° ′
− 38.14	+ 0 0.52	+ 0 0.24	+ 0 10.78	10 25 14.17	58.24	3 13 31.74	+ 49 18 55.18	+ 6.41	+29.56	Nov. 20,			(Mu.)	179 59
38.16	− 5.77	+ .32	− 16.00	344 44 12.24	. .	3 38 28.74	+ 23 37 53.25	5.86	+27.39	61″5	65″1	58″0	62″8	61″85
. .	+ 0.13	− .02	+43 26.44	333 35 20.12	61.87	. . . .	+ 12 28 57.50			61.3	64.8	58.2	63.0	61.83
44.61	+ .18	. .	. .	. . . .	. .	14 8 42.06	. . . .	7.07		61.3	65.5	58.0	62.8	61.90
44.69	. .	+14 28.10	− 1 35.21	300 15 8.82	59.34	16 11 41.58	− 21 7 27.91			61.6	64.5	57.9	63.0	61.75
	− .11	−18 2.84	1 37.36	299 42 35.55						61.2	65.9	58.0	63.0	62.02
44.78	+ .36	0 0.04	− 0 0.24	359 45 20.93	. .	18 31 45.75	+ 38 39 0.84	5.62	−12.33	61.38	65.16	58.02	62.92	61.87
44.90	1.20	.02	+ 35.86	31 0 25.66	61.24	21 26 40.83	+ 69 54 3.71	1.33	+ 7.16					
44.90	0.11	.01	− 34.07	330 17 22.04	. .	21 36 42.80	+ 9 11 0.09	6.34	21.66					
44.92	.03	.11	50.14	320 3 6.67	. .	21 57 58.18	− 1 3 15.28	6.58	+27.94					
46.91	.36	− .01	− 0.25	359 45 20.44	62.53	18 31 45.99	+ 38 38 57.16	5.64	−11.83	Nov. 27,		17h.	(M.)	179 59
46.99	.91	+ .01	+ 26.39	23 3 19.27	. .	21 14 56.49	+ 61 56 55.99	3.05	+ 6.63	59.8	62.9	55.5	60.0	59.55
47.00	1.20	.01	+ 37.28	31 0 24.51	. .	21 26 40.55	+ 69 54 1.23	1.45	7.27	58.2	62.0	53.2	58.2	57.90
47.00	.11	.01	− 35.42	330 17 23.57	. .	21 36 42.63	+ 9 11 0.29	6.37	21.82	59.3	63.1	54.9	59.5	59.20
47.01	+ .03	.03	52.09	320 3 9.48	. .	21 57 58.02	− 1 3 13.80	6.61	28.08	60.4	64.1	55.9	60.7	60.28
		+ .00	1 12.99	310 12 26.46						60.2	63.4	55.4	60.1	59.77
47.03	− .04	− 18.03	1 13.00	310 12 8.42	. .	21 36 2.13	− 10 54 5.84							
47.04	+ .14	.01	0 28.48	335 29 52.23	. .	22 57 11.57	+ 14 23 28.95	5.88	29.28	59.58	63.10	54.98	59.70	59.34
47.07	.25	− .02	11.78	349 21 36.07	. .	0 0 33.27	+ 28 15 12.79	5.48	29.55					
47.08	.14	+ .01	− 28.66	335 26 48.43	. .	0 5 25.19	+ 14 20 25.44	5.67	34.04	Nov. 27,		21h.	(M.)	179 59
47.09	+ .66	+ 26.59	+ 0 18.98	16 48 46.24	. .	0 31 56.90	+ 55 42 23.25	4.84	26.00	59.9	65.4	58.8	61.5	61.40
47.09	− .09	− 0.02	− 1 39.11	302 17 3.94	. .	0 35 57.61	− 18 49 19.05	+ 5.73	45.24	60.4	65.9	57.7	61.4	61.35
. .	. .	23.28	+ 1 13.65	49 36 28.87	. .					60.3	65.3	58.9	60.6	61.25
. .	. .	10.31	1 13.63	28.54	. .					60.5	65.4	58.7	60.9	61.38
. .	. .	2.74	1 13.63	27.79	. .					60.3	65.0	58.2	60.4	60.98
47.11	+ 16.63	0.00	1 13.62	28.47	62.24	1 5 17.16	+ 88 30 5.40	− 18.97	27.42	60.28	65.40	58.46	59.60	61.21
. .	. .	2.27	1 13.65	28.65	. .									
. .	. .	9.56	1 13.69	28.58	. .									
. .	. .	21.75	+ 1 13.72	27.86	. .									
47.13	+ 0.13	0.00	0 25.01	338 18 58.89	. .	1 54 5.99	+ 12 12 27.04			Nov. 29,		21h.	(M.)	179 59
		17.72	− 25.02	338 18 41.16						61.7	66.0	60.0	62.4	62.53
47.16	.52	− 0.03	+ 11.63	10 25 15.60	. .	3 13 32.17	+ 49 18 52.61	+ 6.33	27.23	61.8	66.2	59.4	61.3	62.18
47.18	+ .21	+ 0 0.02	− 17.27	344 44 9.62	. .	3 38 28.56	+ 23 37 46.63	5.76	26.92	62.2	65.9	59.8	63.4	62.83
47.21	− 28.98	13 34.60	25.61	335 5 36 88	. .	4 39 0.46	+ 13 59 17.75			62.5	66.4	59.7	62.5	62.78
47.23	+ 0.26	0 0.13	11.69	349 34 40.86	. .	5 16 42.68	+ 28 28 17.87	6.26	15.79	61.7	66.2	59.4	62.2	62.38
47.23	+ .03	+ .02	53.66	319 48 5.24	. .	5 28 31.20	− 1 18 17.75	4.98	12.01					
48.24	− 10.92	− .04	42.20	325 54 35.42	61.87	23 31 8.22	+ 4 48 12.80	6.01	34.39	61.98	66.14	59.66	62.36	62.54
48.25	+ 0.25	.03	− 11.73	349 21 34.52	. .	0 0 33.31	+ 28 15 11.90	5.49	29.54					
48.26	.66	.02	+ 18.88	16 48 47.78	. .	0 31 56.43	+ 55 42 25.16	4.86	25.87					
48.32	.06	.02	− 44.34	324 35 48.86	. .	2 54 21.43	+ 3 29 26.22	5.22	32.94	Nov. 29,		2h.	(M.)	179 59
48.38	.26	− .00	11.47	349 34 37.38	. .	5 16 42.38	+ 28 28 14.71	6.24	15.75	61.5	64.8	58.8	61.8	61.73
48.88	.06	+ .07	43.68	323 41 48.52	60.59	2 35 26.77	+ 2 35 27.18	5.23	34.76	62.2	65.4	60.0	63.0	62.65
48.89	.06	.06	− 42.33	324 35 43.05	. .	2 54 21.46	+ 3 29 21.71	5.22	33.18	61.7	65.7	59.2	63.0	62.40
48.90	.52	+ .15	+ 10.96	10 25 14.18	. .	3 13 31.92	+ 49 18 52.84	6.32	26.50	61.2	65.5	59.4	63.1	62.30
48.91	+ .21	− .08	− 16.27	344 44 7.65	. .	3 38 29.03	+ 23 37 46.31	5.74	26.79	61.3	65.8	58.6	62.8	62.12
48.93	− 11.26	+ .09	24.93	337 18 11.28	. .	4 27 13.15	+ 16 11 49.94	5.58	21.74	61.58	65.44	59.20	62.74	62.24
48.95	− 0.02	− .08	1 4.52	311 43 20.90	. .	5 7 15.27	− 8 23 0.44	4.58	16.09					
48.96	+ .26	.17	0 10.99	349 34 36.91	. .	5 16 42.90	+ 28 28 15.57	6.19	15.64					
48.96	.04	.01	48.91	320 41 16.98	. .	5 24 15.82	− 0 25 4.36	4.97	13.32					
48.96	10.28	.00	3 13.21	286 56 45.81	. .	5 34 9.62	− 34 9 35.53	3.27	6.49	Nov. 30.			(Mu.)	179 59
− 48.97	+ 0.09	− 0 0.09	− 0 36.70	328 28 42.66	. .	5 46 57.65	+ 7 22 21.32	+ 5.34	+10.09	61.8	64.5	57.8	63.7	61.95
										61.7	65.2	58.1	63.6	62.15
										61.7	65.6	57.7	63.2	62.05
										61.5	64.8	57.5	63.1	61.73
										61.1	64.8	57.5	62.5	61.48
										61.56	64.98	57.72	63.22	61.87

Object.	COR. IN R. Semi-Diam.	Observed Semi-diam. Hor.	Vert.
	M. s.	M. s.	′ ″
Mercury	+ 1 10.54		
Sun	. . . .	1 9.95	16 16.63
Saturn	+ 0.58		0 9.02
Mars	+ 0.53		8.86
Sun	. . . .	1 10.35	16 22.46

5 to 13. Very unsteady. 7. Blurred.
20, 21, 22, 23, 46. Through clouds. 20. Sometimes obscured.
34. Transit should probably be decreased 5s.

Dec. 3,			(M.)	179 59
59.7	63.4	55.8	60.4	59.83
59.8	64.5	57.6	61.8	60.92
60.4	63.9	57.5	61.6	60.85
60.7	63.4	57.4	61.0	60.63
60.0	64.2	57.8	60.9	60.72
60.12	63.88	57.22	61.14	60.59

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′	″	″	″	″	Revs.	In.	°	°	
Dec. 4	1	Sun, 1st & N. L. (Mic. 6)	57.5	9.3	21.2	33.5	45.0	57.0	8.8	16 41 33.19	298 55	24.6	27.0	24.5	28.9	26.25	40.123	30.158	42.5	43.0	Mu.
	2	Sun, 2d & S. L. (Mic. 2)	18.0	30.0	42.0	54.0	5.8	18.0	29.5	16 43 53.90		"	"	"	"	"	33.903	"	"	42.0	
6	†3	Sun, 1st & N. L. (Mic. 6)	41.2	53.8	5.5	17.6	29.3	41.1	53.5	16 50 17.43	298 39	56.4	63.5	60.0	67.3	61.80	40.119	30.168	40.7	36.7	M.
	4	Sun, 2d & S. L. (Mic. 2)	3.0	15.1	26.4	38.7	50.6	2.5	14.6	16 52 38.70		"	"	"	"	"	34.240	"	"	"	
	5	*a* Lyræ	54.7	9.0	23.0	37.1	51.2	5.4	19.2	18 32 37.09	359 45	20.7	22.5	17.1	21.0	20.32	. .	30.172	42.1	38.4	
	6	*a* Aquilæ	38.5	50.1	1.0	12.1	23.0	34.0	45.2	19 44 11.99	329 35	21.8	25.8	21.4	25.1	23.52	. .	30.182	42.8	38.8	
	7	Flora	27.4	39.2	50.0	1.2	12.4	24.2	35.0	4 32 1.34	335 20	0.8	5.9	2.7	6.0	3.85	. .	30.328	37.2	28.0	
	8	*β* Orionis	..	..	..	7.0	17.9	29.2	40.0	5 8 23.52	312 44	26.2	32.7	31.1	33.0	30.75	. .	30.330	36.5	27.4	
	9	*β* Tauri	56.4	9.5	21.6	34.0	46.2	59.0	11.8	5 17 34.07	349 34	47.5	52.0	48.2	53.0	50.37	. .	30.330	36.2	27.3	
	10	*δ* Orionis	34.4	45.7	56.0	7.4	18.1	29.0	40.2	5 25 7.26	. .	.	.	.	.	.	. .				
	11	*ε* Orionis	49.8	1.2	12.0	23.2	33.7	44.8	55.7	5 29 22.91	319 48	49.4	55.8	55.0	62.3	55.62	. .	30.330	36.0	27.5	
	12	*a* Orionis	15.9	27.1	38.4	49.1	0.2	11.2	22.4	5 47 49.19	328 29	15.8	18.7	23.8	21.8	20.02	. .	30.332	35.8	27.3	
	13	*μ* Geminorum	3.3	15.0	26.1	38.2	50.4	2.2	14.1	6 14 38.47	343 41	40.0	45.7	41.4	46.2	43.32	. .	30.342	35.2	26.8	
7	†14	Sun, 1st & N. L. (Mic. 6)	6.3	17.0	29.0	41.2	52.8	4.8	17.2	16 54 41.04	298 32	59.2	63.2	59.4	63.9	61.42	40.120	30.496	38.9	40.0	Mu.
	15	Sun, 2d & S. L. (Mic. 2)	27.0	39.0	50.3	2.0	14.2	26.0	38.0	16 56 2.36		"	"	"	"	"	34.012				
	16	Flora	23.5	35.0	46.2	57.0	8.6	20.0	32.0	4 30 57.47	335 22	27.0	33.7	27.0	31.3	29.75	. .	30.520	28.7	29.3	
	17	*δ* Orionis	35.4	45.5	57.5	8.2	18.5	29.5	40.5	5 25 7.87		.	.	.	.	.	. .				
	18	*ε* Orionis	51.0	2.3	13.1	24.1	36.0	47.1	58.0	5 29 24.51		.	.	.	.	.	. .				
8	19	*a* Lyræ	56.4	10.2	24.2	38.4	52.4	6.1	20.8	18 32 38.36	359 45	21.3	24.8	17.9	21.0	21.25	. .	30.448	42.2	44.4	M.
	†20	*a* Andromedæ	48.2	0.1	13.2	25.9	38.0	50.8	3.2	0 1 25.63	349 21	42.2	49.1	42.2	47.6	45.27	. .	30.410	44.5	43.4	
	†21	*γ* Pegasi	44.2	55.5	..	17.8	29.4	40.4	51.8	0 6 19.85	335 27	9.0	4.9	10.5	5.2	7.40	. .	30.410	44.5	42.5	
	†22	*a* Persei	..	51.0	8.0	24.5	41.2	58.1	15.0	3 14 32.97	10 25	7.3	5.6	0.5	7.5	5.22	. .	30.396	44.7	39.0	
	†23	*η* Tauri	45.5	58.0	9.4	22.1	33.4	45.1	57.2	3 39 21.53	344 44	21.3	27.5	20.4	26.2	28.85	. .	30.386	44.2	39.2	
	24	*γ*¹ Eridani	16.4	28.0	39.4	50.5	1.2	13.1	24.6	3 51 50.46	307 10	43.2	51.6	48.1	52.1	48.75	. .	30.380	43.5	38.7	
	†25	Flora	19.4	31.4	42.2	53.4	4.4	16.0	27.0	4 29 53.34	335 24	53.0	61.6	55.8	61.4	57.95	. .	30.378	42.8	37.5	
	26	*a* Aurigæ	35.3	51.2	6.8	22.4	38.2	54.5	10.6	5 6 22.71	6 56	17.5	16.2	13.0	19.5	16.55	. .	30.378	42.2	38.2	
	†27	*β* Tauri	58.4	10.5	23.1	35.1	48.0	0.2	12.8	5 17 35.44	349 34	55.5	48.9	42.8	48.2	48.85*d*	. .	30.374	42.5	38.2	
	28	*δ* Orionis	..	..	58.0	9.0	19.2	30.5	41.5	5 24 19.64	320 42	0.2	4.4	2.2	7.4	3.55	. .	30.372	42.5	38.6	
	†29	*ε* Orionis	51.4	2.8	13.2	24.1	35.0	46.2	57.4	5 29 24.30	319 48	47.3	51.7	51.8	52.8	50.90	. .	30.372	42.5	38.8	
	†30	*a* Orionis	17.7	28.5	40.0	51.1	2.0	12.8	24.0	5 47 50.87	328 29	11.0	17.2	12.4	17.1	14.42	. .	30.366	42.5	38.8	
14	31	Mars, 1st & N. L.	4.2	16.2	27.4	38.2	49.0	1.2	12.3	1 57 38.36	334 6	5.6	12.8	9.2	12.0	9.90	. .	29.818	58.0	53.7	
	32	Mars, S. L. (Mic.)	..	..	..	..	..	..	..	. . .		"	"	"	"	"	39.588	"	"	"	
	33	Flora	16.5	28.6	40.2	50.6	2.4	13.2	24.8	4 23 50.90	335 42	26.0	34.6	30.0	33.4	31.00	. .	29.846	55.0	46.7	
	34	*δ* Geminorum	21.2	33.4	45.2	57.0	8.4	20.4	32.6	7 11 56.89	343 21	47.2	52.8	48.2	54.2	50.60	. .	29.824	49.7	40.0	
	35	a^2 Geminorum	9.0	22.4	35.0	48.2	0.4	14.1	27.2	7 25 48.04	353 19	10.4	16.8	11.1	14.5	12.20	. .	29.828	49.8	39.7	
17	†36	Mercury, 1st & N. L.	20.7	32.1	44.3	55.5	7.5	19.7	31.4	16 15 55.89	301 38	21.2	24.8	23.5	27.3	24.20	. .	30.178	37.5	35.4	
	37	Mercury, S. L. (Mic.)	..	..	..	..	..	..	..	. . .		"	"	"	"	"	39.975	"	"	"	
18	38	Sun, 1st & N. L. (Mic. 6)	..	53.5	5.7	17.9	30.0	41.4	53.4	17 43 23.65	297 45	49.8	51.8	50.7	54.3	51.65	40.129	30.152	38.5	36.8	
	39	Sun, 2d & S. L. (Mic. 2)	3.8	16.3	28.5	40.2	52.1	4.0	16.2	17 45 40.16		"	"	"	"	"	33.982	"	"	"	
	40	*a* Lyræ	0.2	14.1	28.2	43.0	56.8	11.1	25.0	18 32 42.63	359 45	19.4	18.4	14.8	18.1	17.67	. .	30.142	39.2	37.6	
	41	*a* Cygni	24.5	40.2	55.4	11.0	26.4	41.9	57.2	20 37 10.94	5 50	56.4	54.1	49.2	58.5	54.55	. .	30.154	42.0	39.8	
	42	*a* Pegasi	33.9	45.5	56.7	8.4	19.4	30.3	42.4	22 58 8.09	335 30	10.3	19.1	12.4	16.4	14.67	. .	30.144	42.2	36.0	
	43	*a* Andromedæ	52.8	5.0	17.3	29.9	42.0	54.9	7.2	0 1 29.87	349 21	42.5	40.5	46.5	45.0	43.57	. .	30.154	42.0	34.6	
	44	*γ* Pegasi	48.0	59.4	10.2	22.0	33.5	44.7	56.4	0 6 22.03	335 27	6.5	11.8	9.0	13.5	10.20	. .	30.152	41.9	34.9	
	45	*a* Cassiopeiæ	54.1	14.1	33.1	53.0	12.3	31.6	51.5	0 32 52.81	16 48	27.7	26.4	22.4	27.5	26.00	. .	30.150	41.2	35.7	
	46		48.0								49 35	45.8	39.5	38.3	46.5	42.52	. .	30.150	40.6	35.5	
	47			54.0								33.7	26.4	28.4	32.5	30.25	. .				
	48				51.0							27.2	20.5	20.5	26.3	23.62	. .	30.152	41.2	35.4	
	49	Polaris				53.0				1 5 51.47		24.2	17.4	17.4	23.9	20.72	. .				
	50						51.5					27.0	21.5	20.3	26.6	23.85	. .	30.148	40.0	35.3	
	51							51.5				32.5	26.8	26.0	32.0	29.33	. .				
	52								51.0			43.6	38.1	37.0	43.2	40.48	. .	30.148	40.0	35.0	

DATE.	CLOCK +*m*.	Hourly Rate.	VALUE OF *n*.	VALUE OF *c*.	Error of Runs.	Mic. coin. At	
	h.	s.	s.	s.	″	h.	rev.
Dec. 6,	6	*f* 51.60	*g* 0.032	+ 0.397	— 0.038 — 0.73	17	40.120
"						2	.173
7,	5	52.64	.030			17	.120
8,	4	53.00	.028		.40		
14,	7	53.39	.036		.42	2	.114
"						5	.127
15,		. .	.038			18	.116
17,		. .	.042		.27	16	.129
		57.35	.044		— .27	17	.129

1 rev. = 34″.406

14 Wire I recorded 11*s*. less, the other wires 10*s* less.
40. Wire II recorded 15*s*.1

Assumed Latitude 38° 53′ 39″.25 North.

No. for ref.	COR. IN Æ. Clock.	COR. IN Æ. Inst.	COR. IN DEC. Inst.	COR. IN DEC. Object.	Corrected Reading.	Zenith Point. 359° 59′	OBSERVED R. A.	OBSERVED DEC.	REDUCTION TO 1850.0. R. A.	REDUCTION TO 1850.0. DEC.	NADIR POINT. A.	B.	C.	D.	Mean.
	s.	M. s.	′ ″	′ ″	° ′ ″	″	H. M. s.	° ′ ″	s.	″	-				° ′
1	— 49.27	— 0 0.12	+14 28.32	— 1 38.62	299 8 15.40	62.26	16 41 54.15	— 22 14 30.07				Dec.4,		(Mu.)	179 59
2			−18 14.32	1 40.90	298 35 30.48										
3			+14 28.43	1 41.07	298 52 49.16	60.03	16 50 36.76	— 22 29 48.23			61″7	66″2	59″2	62″9	62″50
4	51.18	— .12	−18 2.39	1 43.47	298 20 15.94						61.9	65.8	54.8	62.6	62.28
											61.7	66.2	58.2	62.7	62.20
5	51.23	+ .36	+ 0 0.08	0 0.25	359 45 20.15	. .	18 31 46.22	+ 38 38 59.37	+ 5.69	— 9.97	61.7	66.1	58.3	62.7	62.20
6	51.29	— .10	— .14	35.20	329 34 48.18	. .	19 43 20.80	+ 8 28 27.40	7.00	+ 5.81	61.7	65.9	58.3	62.7	62.15
7	51.56	+ .14	.23	24.52	335 19 35.31	63.60	4 31 9.92	+ 14 13 14.75			61.74	66.04	58.56	62.72	62.27
8	51.57	— 16.63	.12	1 6.71	312 43 23.92	. .	5 7 15.30	+ 8 23 0.43	4.54	16.63					
9	51.58	+ 0.26	.28	0 11.36	349 34 38.73	. .	5 16 42.75	+ 28 28 14.38	6.15	15.54		Dec.6,	17h.5	(M.)	179 59
10	51.58	.04	. .	. .	. . . . .	. .	5 24 15.72	. . . .	4.92						
11	51.59	.03	.22	52.08	319 48 3.76	. .	5 28 31.35	— 1 18 20.59	4.88	13.03	60.8	63.5	56.4	61.4	60.52
12	51.60	.09	.16	37.84	328 28 42.02	. .	5 46 57.68	+ 7 22 17.67	5.30	10.40	59.9	62.8	55.5	60.6	59.70
13	51.61	+ .20	— .07	18.09	343 41 25.16	. .	6 13 47.06	+ 22 35 0.81	6.06	+ 7.36	60.1	63.0	55.4	60.5	59.75
											59.9	63.4	56.2	60.8	60.08
14	52.27	— .12	+14 28.19	1 42.04	298 45 47.57	61.46	16 54 59.31	— 22 36 55.21			59.6	63.9	55.8	61.2	60.13
15			−18 10.49	1 44.49	298 13 6.44						60.06	63.32	55.86	60.90	60.04
16	52.62	+ .14	0 0.00	0 24.57	335 22 5.18	61.74	4 30 4.99	+ 14 15 43.69							
17	52.65	.04	. .	. .	. . . . .	. .	5 24 15.26	. . . .	4.91			Dec.6,	Night	(M.)	180 0
18	52.65	.03	. .	. .	. . . . .	. .	5 28 31.89	. . . .	4.86						
19	52.74	.36	+ .05	0.25	359 45 21.05	61.20	18 31 45.98	+ 38 38 59.10	5.70	— 9.41	3.0	7.2	2.2	3.3	3.93
											2.5	6.9	0.4	3.3	3.28
20	52.89	+ .25	.10	11.25	349 21 34.15	60.89	0 0 32.99	+ 28 15 12.48	5.60	+29.59	3.8	7.5	1.7	4.5	4.37
21	52.89	— 2.03	.02	— 27.40	335 26 40.02	. .	0 5 24.93	+ 14 20 18.38	5.79	34.39	2.7	6.3	0.8	2.2	3.00
22	52.98	— 7.90	+ .15	+ 11.10	10 25 16.49	. .	3 13 32.09	+ 49 18 54.85	6.32	25.62	2.8	7.0	0.7	3.0	3.37
23	52.99	+ 0.21	— .07	— 16.47	344 44 12.31	. .	3 38 28.75	+ 23 37 50.67	5.71	26.64	2.96	6.98	1.16	3.26	3.59
24	53.00	— .06	— .15	1 19.45	307 9 29.15	. .	3 50 57.40	— 13 56 52.49	4.47	29.72					
25	53.02	+ .14	+ .33	— 0 23.93	335 24 30.58	. .	4 29 0.46	+ 14 18 12.71				Dec.7,	17h.5	(M.)	179 59
26	53.04	.47	— .09	+ 7.37	6 56 23.83	. .	5 5 30.14	+ 45 50 2.19	6.91	16.61	60.5	65.2	57.5	62.3	61.38
27	53.04	+ .26	.00	— 11.12	349 34 35.23	. .	5 16 42.66	+ 28 28 16.21	6.12	15.46	60.9	65.1	57.9	62.3	61.55
28	53.05	— 10.92	+ .01	49.23	320 41 14.33	. .	5 24 15.67	— 0 25 7.31	4.90	14.02	60.70	65.15	57.70	62.30	61.46
29	53.05	+ 0.03	+ .11	50.95	319 48 0.06	. .	5 28 31.28	— 1 18 21.58	4.85	13.33					
30	53.06	.09	— .10	36.99	328 28 37.33	. .	5 46 57.90	+ 7 22 15.69	5.27	+10.60		Dec.7,		(Mu.)	179 59
31	53.41	.13	+ .02	22.42	334 5 47.50	58.62	1 56 45.43	+ 12 59 19.08			61.5	64.9	57.5	62.8	61.67
32			— 18.07	22.70	334 5 29.41						61.5	64.9	57.5	62.8	61.68
33	53.50	.14	+ .07	22.68	321 6 19.37	. .	4 22 57.54	+ 14 35 49.02			61.4	65.0	57.9	62.7	61.75
34	53.60	.20	.12	17.66	343 21 33.06	. .	7 11 3.49	+ 22 15 13.69	6.01	— 0.80	61.7	64.9	57.8	62.8	61.80
35	53.60	.29	+ .15	6.93	353 19 6.42	. .	7 24 54.73	+ 32 12 47.05	6.69	1.46	61.6	64.9	57.9	62.8	61.74
36	56.84	.10	— 0.04	1 30.44	301 36 53.72	60.30	16 14 59.15	— 19 29 30.03			61.54	64.92	57.72	62.78	61.74
37			— 5.34	1 30.54	301 36 38.32										
38	56.89	+ 6.13	+14 28.27	1 45.06	297 58 34.86	. .	17 43 31.88	— 23 24 7.09				Dec.8,	19h.	(M.)	179 59
39		— 0.13	−18 11.76	1 47.62	297 25 52.27						60.8	65.1	56.7	62.0	61.15
40	56.92	+ .36	+ 0 0.03	— 0 0.25	359 45 17.45	. .	18 31 46.07	+ 38 38 56.40	5.72	— 6.49	60.0	66.4	58.5	61.2	61.53
41	57.01	.45	— .01	+ 6.13	5 51 0.68	. .	20 36 14.38	+ 44 44 39.63	5.11	+ 7.69	60.8	65.6	57.2	61.6	61.30
42	57.12	.14	+ .02	— 27.46	335 29 47.28	. .	22 57 11.11	+ 14 23 26.18	6.13	30.65	60.2	65.0	56.8	60.9	60.73
											61.0	65.3	57.2	61.7	61.30
43	57.16	.25	.07	11.35	349 21 32.29	. .	0 0 32.96	+ 28 15 11.24	5.75	29.92					
44	57.17	.14	.01	— 27.59	335 26 42.61	. .	0 5 25.00	+ 14 20 21.56	5.91	34.95	61.56	65.48	57.28	61.48	61.20
45	57.19	.66	+ .04	+ 0 18.22	16 48 44.26	. .	0 31 56.28	+ 55 42 23.21	+ 5.31	24.34					
46	. .	. .	— 23.16	1 10.78	49 36 30.14	. .						Dec.8,	Night	(M.)	179 59
47	. .	. .	10.23	1 10.77	30.79	. .					59.7	64.1	57.4	60.7	60.48
48	. .	. .	— 2.59	1 10.79	31.82	. .					60.4	65.0	58.1	61.5	61.25
49	— 57.21	+ 16.63	+ 0.09	1 10.79	31.60	. .	1 5 10.89	+ 88 30 9.89	— 6.68	+22.16	60.5	64.2	57.6	61.3	60.90
50	. .	. .	— 2.26	1 10.80	32.29	. .					60.5	64.3	58.2	60.4	60.85
											60.6	64.7	57.8	61.4	60.98
51	. .	. .	9.65	1 10.83	30.51	. .					60.22	64.46	57.82	61.06	60.89
52	. .	. .	— 0 22.04	+ 1 10.86	29.30	. .									

No.	Object.	COR. IN Æ. Semi-Diam.	Observed Semi-Diam. Hor.	Vert.
		M. s.	M. s.	′ ″
1	Sun . .	. . .	1 10.36	16 22.46
3	Sun . .	. . .	1 10.63	16 16.61
14	Sun . .	. . .	1 10.66	16 20.56
31	Mars .	+ 0 0.45	. . .	0 9.04
36	Mercury	+ 0.20	. . .	2.70
38	Sun . .	. . .	1 11.25	16 21.30

3, 30. Unsteady.
20, 21, 22, 23. Through clouds.
25. Obs'd for Dec. at 4h. 30m. 37s.
27. At wire VII. very faint.
28. Through mist; very faint.
36. Not well defined; unsteady; +0″.10 applied for def. illu'n.
42. Field of view too dark.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	° ′ ″	″	″	″	″	Revs.	In.	°	°	
Dec. 18	1	α Arietis	59.2	11.0	23.2	35.1	46.7	59.0	10.4	1 59 34.94	343 51 6.4	11.1	5.8	11.5	8.70	. .	30.144	39.2	32.5	M
	2	γ Ceti	50.8	1.9	13.1	24.2	35.0	46.0	56.9	2 36 23.99	323 42 26.3	33.4	28.6	31.8	30.02	. .	30.136	39.0	31.9	
	3	α Ceti	45.2	56.2	7.9	18.8	29.2	40.5	51.6	2 55 18.49	324 36 16.8	25.6	21.2	24.8	22.10	. .	30.124	38.8	31.1	
	†4	Moon, 1st & S.L. (Mic. 2)	39.4	51.0	2.4	14.0	25.8	36.1	48.7	3 10 13.91	334 52 51.3	58.8	51.0	58.5	54.90	40.129	30.116	38.8	30.7	
	5	η Tauri	50.0	2.8	14.2	26.0	38.1	50.2	2.0	3 39 26.19	344 44 21.5	27.8	22.0	27.1	24.60	. .	30.108	38.1	30.2	
	†6	γ¹ Eridani	20.0	32.2	43.4	54.2	6.0	17.3	28.5	3 51 54.51	307 10 43.1	50.3	45.5	51.8	47.67	. .	30.102	38.0	30.0	
	†7	α Tauri	35.9	47.8	59.0	10.5	21.7	33.4	45.7	4 28 10.57	. . .	.	.	.	.	. .				
21	†8	α Andromedæ	55.4	8.3	20.9	33.0	45.4	58.1	10.2	0 1 33.04	349 21 44.3	48.3	41.4	47.4	45.35	. .	30.006	35.7	22.2	
	†9	γ Pegasi	..	..	14.0	25.2	36.4	48.1	59.3	0 6 36.60	335 27 7.8	13.2	9.7	14.1	11.20	. .	30.004	35.5	22.4	
	10	α Cassiopeiæ	57.4	17.3	36.5	56.4	15.4	35.1	55.0	0 32 56.16	16 48 22.0	23.2	18.0	24.4	21.90	. .	29.988	34.2	20.9	
	11	*	55.0								49 35 43.8	38.8	37.0	37.0	40.78	. .	29.978	32.0	20.5	
	12			58.0								30.0	26.2	25.4	31.0	28.15	. .			
	13				56.5							23.4	19.0	16.8	23.5	20.68	. .	29.972	30.0	20.3
	†14	Polaris				59.0				1 5 56.57		22.3	17.1	16.0	22.4	19.45	. .			
	15						54.5					23.8	17.4	18.4	25.0	21.15	. .	29.968	28.4	20.0
	16							57.0				32.5	27.1	25.0	31.7	29.07	. .			
	17								56.0			44.5	40.7	39.0	46.7	42.72	. .	29.958	27.5	19.8
	18	γ Ceti	54.2	5.7	16.2	27.2	37.8	49.2	0.2	2 36 27.21	323 42 30.9	38.2	33.5	37.0	34.90	. .	29.952	26.5	18.2	
	†19	α Ceti	48.9	0.0	11.2	21.9	32.4	44.0	55.2	2 55 21.94	324 36 20.8	28.4	24.5	28.0	25.42	. .	29.954	26.5	17.6	
	†20	α Persei	41.0	58.4	15.0	32.5	48.7	6.0	22.8	3 14 32.06	10 25 7.7	5.4	1.3	8.4	5.70	. .	29.946	26.8	17.3	
	†21	η Tauri	..	5.5	17.4	29.4	41.5	53.5	5.1	3 39 35.40	344 44 24.3	32.3	25.4	29.4	27.85	. .	29.940	26.8	16.8	
	†22	γ¹ Eridani	24.2	35.5	46.7	58.4	9.5	20.4	32.3	3 51 58.14	307 10 50.7	57.3	56.1	59.4	55.87	. .	29.936	26.5	16.7	
	†23	Flora	29.1	40.5	51.0	3.5	14.5	26.0	37.1	4 18 3.10	336 2 23.8	31.0	25.8	30.9	27.88	. .	29.922	25.8	15.9	
	†24	β Orionis	42.8	54.0	4.9	16.2	27.0	38.4	49.1	5 8 16.06	312 44 25.8	31.8	29.2	32.6	29.85	. .	29.918	24.8	16.5	
	†25	β Tauri	6.2	18.7	30.9	43.5	56.0	8.4	20.7	5 17 43.49	349 34 53.5	55.8	54.8	59.0	55.77	. .	29.914	24.2	14.4	
22	†26	α Coronæ Borealis	39.1	51.2	3.7	16.0	28.3	40.5	53.0	15 29 15.97	348 20 18.8	23.7	19.4	22.4	21.07	. .	29.886	32.2	25.4	
23	†27	Sun, 1st & N.L. (Mic. 6)	59.6	11.4	23.4	35.7	47.4	59.2	11.2	18 5 35.41	297 42 58.0	58.4	60.4	62.3	59.78	40.132	29.804	33.2	30.8	
	†28	Sun, 2d & S.L. (Mic. 2)	..	33.8	46.0	58.0	10.0	22.0	34.1	18 8 3.98		"	"	"	"	34.109	29.794	33.0	30.1	
	†29	α Lyræ	6.0	20.0	34.2	48.0	2.2	16.4	30.4	18 32 48.17	359 45 18.0	18.5	13.4	18.5	17.10	. .	29.772	32.9	29.8	
	†30	α Aquilæ	..	1.0	12.2	23.4	34.1	45.4	56.3	19 44 28.90	329 35 21.9	26.8	22.0	25.1	23.95	. .	29.728	33.2	29.9	
	†31	α Tauri	42.0	53.6	5.0	16.2	27.4	39.1	50.6	4 28 16.27	337 18 33.4	39.0	33.6	40.2	36.55	. .	29.520	35.2	30.9	
	32	β Orionis	44.8	56.0	6.9	18.1	29.2	40.1	51.0	5 8 18.01	312 44 18.7	23.2	21.0	24.8	21.92	. .	29.508	35.1	31.5	
	33	β Tauri	7.9	20.4	33.1	45.4	57.9	10.1	23.0	5 17 45.40	349 34 48.8	50.8	45.4	51.2	49.05	. .	29.506	35.1	31.3	
	34	δ Orionis	45.4	56.8	7.7	18.4	29.1	40.5	51.2	5 25 18.44	320 41 59.5	62.4	59.0	64.3	61.30	. .	29.506	35.1	31.3	
	35	α Orionis	27.4	38.8	49.9	0.9	12.0	23.0	34.1	5 48 0.87	328 29 12.6	16.0	13.0	17.2	14.70	. .	29.508	35.0	31.1	
24	36	Sun, 1st & N.L. (Mic. 6)	27.1	39.3	51.2	3.2	15.1	27.0	39.1	18 10 3.13	297 43 46.7	48.4	48.1	51.9	48.78	40.129	29.640	38.0	40.0	
	37	Sun, 2d & S.L. (Mic. 2)	50.0	2.0	14.1	26.0	38.0	49.8	1.8	18 12 25.94		"	"	"	"	34.120	"	"	"	
	38	α Lyræ	7.2	21.1	35.3	49.3	3.2	17.4	31.3	18 32 49.26	359 45 16.3	17.0	11.7	17.4	15.60	. .	29.648	38.5	40.0	
	†39	α Aquilæ	51.0	2.0	13.3	24.0	35.6	46.1	57.4	19 44 24.20	329 35 21.0	25.9	21.1	24.4	23.10	. .	29.656	39.8	42.9	
	40	α Cygni	31.4	47.1	2.2	17.5	33.2	48.2	54.2	20 37 17.69	5 50 56.2	50.1	54.0	59.0	54.82	. .	29.676	41.0	42.8	
28	41	Sun, 1st & N.L. (Mic. 6)	16.4	28.8	40.2	52.1	4.0	16.1	28.2	18 27 51.97	297 51 53.2	55.4	56.5	57.8	55.72	40.130	30.302	34.5	34.4	
	42	Sun, 2d & S.L. (Mic. 2)	39.0	50.9	3.0	14.5	26.0	38.4	50.9	18 29 14.69		"	"	"	"	34.124	30.302	34.8	34.4	
	43	Flora (Mic. 6)	55.0	6.7	18.0	29.2	40.5	52.0	3.7	4 14 29.30	336 18 28.8	36.7	31.9	37.2	33.65	38.224	30.298	36.2	27.0	
	44	α Tauri	46.8	58.0	9.5	21.0	31.9	44.0	55.1	4 28 20.90	337 18 32.7	38.8	33.4	39.5	36.10	. .	29.296	36.1	27.8	
	45	β Orionis	49.4	0.5	11.3	23.1	33.2	44.4	56.1	5 8 22.57	312 44 18.4	24.3	21.7	25.0	22.35	. .	30.300	36.1	27.8	
	†46	β Tauri	12.2	25.2	37.4	50.3	2.2	15.4	27.3	5 17 50.00	349 34 48.7	50.3	45.9	50.7	48.90	. .	30.298	36.1	27.8	
	†47	ε Orionis	5.8	16.0	27.5	38.4	..	0.2	11.2	5 29 36.52	. . .	.	.	.	.	. .				
	48	α Orionis	32.1	43.3	54.2	5.4	16.2	27.8	38.3	5 48 5.33	328 29 13.0	17.5	13.4	17.4	15.32	. .	30.290	36.0	27.6	
	49	δ Ursæ Minoris, S. P.	56.5	59.5	7.5	..	15.0	20.0	28.0	6 22 11.08	. . . .	.	.	.	.	. .				
	50	51 (Hev.) Cephei	31.5	5.0	..	3.0	52.0	37.0	26.0	6 29 35.75	. . . .	.	.	.	.	. .				
	51	ε Canis Majoris	10.2	23.2	35.2	48.1	0.3	13.0	25.2	6 53 47.89	292 22 26.8	32.3	30.9	32.1	30.52	. .	30.268	32.5	26.5	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.	1 rev. = 34″.406
h.	s.	s.	s.	s.	″	h.	revs.	
Dec. 21, 3	f 60.69	g 0.045	+0.397	+0.038	−0.26	4	40.135	
23, 5	62.73	.050			− .53	19	.132	
24, 20	63.89	.040				19	.129	
28, 6	67.19	.035			+ .09	19	.130	

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359° 59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean.
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					° ′
— 57.25	+ 0 0.20	+ 0 0.01	— 0 17.58	343 50 51.12	60.30	1 58 37.89	+ 22 44 30.07	+ 5.71	+32.49		Dec.14		(M.)	**179 59**
57.28	.06	.07	44.60	323 41 45.47	. .	2 35 26.77	+ 2 35 24.42	5.29	36.02	57″9	62″0	56″7	59″0	58″90
57.29	.06	+ .03	— 43.20	324 35 38.94	. .	2 54 21.26	+ 3 29 17.88	4.25	34.40	57.7	62.2	56.0	58.2	58.53
57.30	.14	—14 41.98	+41 9.56	335 19 22.48	. .	3 10 26.70	+ 14 13 1.43			58.2	62.6	55.7	58.8	58.82
57.32 +	.21	0 0.05	— 0 16.24	344 44 8.31	. .	3 38 29.08	+ 23 37 47.26	5.70	26.42	57.5	62.2	55.4	58.2	58.33
57.33 —	.07	— .10	1 20.19	307 9 27.38	. .	3 50 57.11	— 13 56 53.67	4.47	31.55	57.6	62.4	55.2	58.9	58.52
										57.78	62.28	55.80	58.62	58.62
57.36 +	.15	. .	. .	. . .	. .	4 27 13.36	. . .	5.48						
60.56 +	.25	+ .06	0 11.60	349 21 33.81	62.44	0 0 32.73	+ 28 15 10.62	5.79	30.08					
60.57 —	11.17	.01	— 28.18	335 26 43.03	. .	0 5 14.86	+ 14 20 19.84	5.95	35.16		Dec.18	23h.5	(M.)	**179 59**
60.59 +	0.66	+ .03	+ 18.69	16 48 40.62	. .	0 31 56.23	+ 55 42 17.43	5.39	24.24	60.6	64.7	58.7	60.1	61.03
. .	. .	— 23.07	1 12.65	49 36 30.36	. .					59.0	63.6	56.9	58.5	59.50
. .	. .	10.35	1 12.65	30.45	. .					59.0	63.7	56.7	60.0	59.85
. .	. .	2.78	1 12.66	30.56	. .					60.8	64.2	58.4	60.9	61.07
60.61	16.63	0.16	1 12.68	31.97	. .	1 5 12.59	+ 88 30 8.19	— 4.74	21.67	59.2	63.2	57.4	60.4	60.05
. .	. .	2.53	1 12.68	31.33	. .					59.72	63.88	57.62	59.98	60.30
. .	. .	9.95	1 12.72	31.84	. .									
. .	. .	— 22.30	+ 1 12.72	33.14	. .						Dec.21	0h.	(M.)	**179 59**
60.68	0.06	+ 0.05	— 0 45.65	323 41 49.30	. .	2 35 26.59	+ 2 35 26.11	+ 5.31	36.27	62.9	66.5	58.5	63.4	62.93
60.69	.06	— .04	— 44.23	324 35 41.23	. .	2 54 21.31	+ 3 29 18.04	5.27	34.65	62.6	65.9	59.3	62.2	62.50
60.70 +	.52	.09	+ 11.46	10 25 17.25	. .	3 13 31.88	+ 49 18 54.06	6.39	23.60	62.5	66.0	59.6	62.4	62.63
60.72 —	5.79	— .05	— 17.01	344 44 10.79	. .	3 38 28.89	+ 23 37 47.60	5.71	26.37	62.0	65.3	58.7	62.1	62.02
										62.0	65.5	58.8	62.1	62.10
60.73 +	0.14	.00	1 22.08	307 9 33.79	. .	3 50 57.55	— 13 56 49.40	4.48	32.10	62.40	65.84	59.06	62.44	62.43
60.75 +	.15	+ 5 35.42	0 24.14	336 7 39.16	. .	4 17 2.50	+ 15 1 15.99							
60.79 —	.02	— 0 0.04	1 7.41	312 43 22.40	. .	5 7 15.25	— 8 23 0.79	4.43	19.33		Dec.23	20h.	(M.)	**179 59**
60.80 +	.26	.06	0 11.52	349 34 44.16	. .	5 16 42.95	+ 28 28 20.97	5.98	+14.96					
62.05 +	.24	— .11	12.61	348 20 8.35	. .	15 28 14.16	+ 27 13 45.71	6.46	—26.68	61.7	66.5	58.4	62.6	62.30
—	.13	+14 28.36	1 45.42	297 55 42.72	61.89	18 5 44.38	— 23 26 59.15			61.4	65.4	58.3	62.0	61.77
62.18 —	6.13	—18 7.40	1 48.12	297 23 4.26						61.8	65.7	58.4	61.4	61.82
62.20 +	0.36	0 0.48	0 0.25	359 45 16.90	. .	18 31 46.33	— 38 38 54.26	5.71	— 4.96	61.4	65.7	58.3	62.3	61.93
62.26 —	5.45	— .64	35.33	329 34 48.51	. .	19 43 21.19	+ 8 28 25.87	7.05	+ 8.30	61.3	65.4	58.0	61.8	61.62
										61.52	65.74	58.28	62.02	61.89
62.72 +	0.15	+ .11	24.94	337 18 11.72	61.74	4 27 13.70	+ 16 11 49.25	5.47	22.27					
62.74 —	.03	— .11	1 4.39	312 43 17.42	. .	5 7 15.24	— 9 23 5.06	4.42	19.68		Dec.23	Night.	(M.)	**179 59**
62.75 +	.26	— .21	0 10.96	349 34 37.88	. .	5 16 42.91	+ 28 28 15.39	5.96	14.88					
62.76	.04	.00	48.74	320 41 12.56	. .	5 24 15.73	— 0 25 9.93	4.76	16.12	61.4	64.8	58.2	62.2	61.65
62.77 +	.09	+ .22	36.54	328 28 38.38	. .	5 46 58.19	+ 7 22 15.89	5.09	+12.11	60.8	64.4	57.7	62.6	61.38
		+14 27.75	1 42.59	297 56 33.94						61.0	65.3	58.3	62.2	61.70
63.81 —	.13	—18 7.51	1 45.10	297 23 56.17	61.60	18 10 10.59	— 23 26 7.30			61.8	65.8	58.8	62.0	62.10
										61.4	65.2	58.9	61.9	61.85
63.83 +	.36	+ 0 0.09	0 0.25	359 45 15.44	. .	18 31 45.79	+ 38 38 53.09	5.70	— 4.65	61.28	65.10	58.38	62.18	61.74
63.87 —	.10	— .23	— 34.32	329 34 48.55	. .	19 43 20.43	+ 8 28 26.20	7.04	+ 8.46					
63.91 +	.45	— .04	+ 6.28	5 51 1.06	. .	20 36 14.23	+ 44 44 38.71	5.19	9.13		Dec.24		(M.)	**179 59**
66.79 —	.13	+14 28.18	1 45.76	298 4 38.14	62.48	18 27 56.51	— 23 18 3.96			61.8	65.0	58.3	62.4	61.88
		—18 7.00	— 1 48.32	297 32 0.40						61.4	65.4	57.4	60.9	61.27
67.13 +	.15	+13 22.62	0 23.07	336 31 33.20		4 13 22.32	+ 15 25 9.97	5.45	24.31	61.4	65.4	58.2	61.5	61.63
67.14 +	.15	— 0 0.01	25.76	337 18 10.33	. .	4 27 13.91	+ 16 11 47.10	5.47	22.40	61.53	65.27	57.97	61.60	61.59
67.16 —	.02	+ .01	1 6.61	312 43 15.75	. .	5 7 15.37	— 8 22 7.48	4.41	20.54					
67.17 +	.26	.01	0 11.34	349 34 37.57	. .	5 16 43.09	+ 28 28 14.34	5.93	14.68		Dec.28		(M.)	**179 59**
67.18	1.85	. .	. . .	. . . .	. .	5 28 31.19	. . . .	4.69						
67.19 +	0.09	+ .01	37.78	328 28 37.55	. .	5 46 58.23	+ 7 22 14.32	+ 5.05	12.59	62.1	65.7	58.6	62.0	62.10
										62.0	66.1	58.3	62.4	62.20
67.20 —	7.46	. .	. . .	. . . .	. .	6 20 56.42	. . . .	— 16.13		62.8	66.5	59.0	62.5	62.70
67.21	28.50	. .	. . .	. . . .	. .	6 28 0.04	. . . .	+ 33.88		62.5	66.0	59.5	62.4	62.60
— 67.22 —	0.18	.00	— 2 29.03	292 20 1.49	. .	6 52 40.59	— 28 46 21.74	+ 3.04	+ 0.25	62.4	66.8	59.8	62.2	62.80
										62.36	66.22	59.04	62.30	62.48

Object.	COR IN R.	Observed Semi-Diam.	
	Semi-Diam.	Hor.	Vert.
	m. s.	m. s.	′ ″
Moon .	+ 1 9.95		
Sun . .		1 11.28	16 19.23
Sun . .		1 11.40	16 18.89
Sun . .		1 11.36	16 18.87

4. Ob'd for Dec. at 3h. 11m. 35s.
6 to 30. Unsteady.
39. Thin clouds flying across.
46, 47. Unsteady.

DATE. 1847.	No. for ref.	OBJECT OBSERVED.	TIMES OF TRANSIT OVER WIRES. I.	II.	III.	IV.	V.	VI.	VII.	Mean.	CIRCLE & MICROMETER READINGS. A.	B.	C.	D.	Mean.	Mic.	Barometer.	THER'S At.	THER'S Ex.	Observer.
			s.	s.	s.	s.	s.	s.	s.	h. m. s.	″	″	″	″	″	Revs.	In.	°	°	
Dec. 28	1	Jupiter, 1st & N. L.	50.0	2.0	13.0	25.7	36.8	49.0	1.4	7 13 25.41	343 42 1.6	7.1	3.2	7.0	4.72	. .	30.268	32.2	25.4	M
	2	Jupiter, S. L. (Mic.)	..	..	..	..	..	..	..	. . . .		"	"	"	"	38.870	"	"	"	
	3	α^2 Geminorum	23.2	36.1	48.1	1.2	15.2	28.0	40.7	7 26 1.79	. . .	.	.	.	.	. .			25.9	
	4	α Canis Minoris	56.1	7.4	18.0	28.9	40.2	51.5	2.0	7 32 29.16	326 43 25.0	32.0	28.0	31.5	29.12	. .	30.270	32.0	25.8	
29	5	15 Argus	36.0	49.2	1.1	13.3	25.0	37.1	49.0	8 2 12.96	297 16 3.4	5.4	6.2	10.2	6.30	. .	30.274	32.0	25.5	
	6	ϑ^1 Ceti	1.0	12.5	23.5	35.9	45.5	57.0	8.2	1 17 34.67	312 9 10.5	16.9	15.9	17.4	16.45	. .	30.304	40.6	38.4	M
	7	α Arietis	10.5	22.0	34.3	46.0	58.5	10.0	22.5	1 59 46.26	. . .	.	.	.	.	. .				
	8	Mars, 1st & N. L.	52.0	..	15.0	..	38.0	..	1.0	2 10 26.50	334 33 19.2	24.0	19.1	24.0	21.75	. .	30.306	40.8	37.0	
	9	Mars, 2d & S. L. (Mic.)	..	5.0	..	27.5	..	50.5	..	2 10 27.67		"	"	"	"	39.586	"	"	"	
	10	γ Ceti	1.6	13.3	24.2	35.0	46.2	57.5	8.5	2 36 35.19	323 42 33.0	37.5	32.3	38.6	35.35	. .	30.306	41.0	36.2	
	11	α Ceti	56.6	8.3	18.8	30.2	41.2	52.0	3.2	2 55 30.04	324 36 21.6	29.5	24.6	29.0	26.17	. .	30.300	40.5	35.9	
	12	α Persei	49.0	6.2	23.0	40.0	56.5	13.8	30.5	3 14 39.86	10 25 10.7	7.8	5.0	12.5	8.95	. .	30.304	40.5	35.0	
	13	η Tauri	1.2	13.5	25.5	37.0	49.0	1.5	11.5	3 39 37.03	344 44 24.2	31.3	25.5	30.8	27.95	. .	30.304	40.0	35.0	
	14	γ^1 Eridani	32.0	43.0	54.5	6.0	17.0	29.0	40.0	3 52 5.93	307 10 49.0	56.0	54.9	58.4	54.57	. .	30.304	40.0	33.8	

DATE.	CLOCK +m.	Hourly Rate.	VALUE OF n.	VALUE OF c.	Error of Runs.	Mic. coin. At	Mic. coin.	1 rev. = 34″.406
h.	s.	s.	s.	s.	″	h.	revs.	
Dec. 29, 3	f 66.86	g 0.040	+0.397	+0.038	−0.32	2	40.129	

1. Wire IV recorded 26s.7

Assumed Latitude 38° 53′ 39″.25 North.

COR. IN R.		COR. IN DEC.		Corrected Reading.	Zenith Point.	OBSERVED		REDUCTION TO 1850.0.		NADIR POINT.				
Clock.	Inst.	Inst.	Object.		359°59′	R. A.	DEC.	R. A.	DEC.	A.	B.	C.	D.	Mean
s.	m. s.	′ ″	′ ″	° ′ ″	″	h. m. s.	° ′ ″	s.	″					° ′
											Dec.	29,	(Mu.)	179 59
— 67.23	+ .20	— 0 0.00	— 0 17.54	343 41 47.18	62.48	17 12 20.59	+ 22 35 2.21			61″9	66″5	61″0	63″4	63″20
		43.36	0 17.55	343 41 13.81										
67.24	+ 0 0.29	. . .	. . .	. . . . .	. .	7 24 54.84	. . . . .	+ 6.18		61.9	64.4	57.0	62.1	61.35
67.25	+ .08	0.00	40.57	326 42 48.55	. .	7 31 21.99	+ 5 36 25.32	5.06	— 6.98	59.8	64.3	56.5	60.5	60.28
67.26	— .14	— .01	1 59.59	297 14 6.70	. .	8 1 5.56	— 23 52 16.53	3.54	—13.76	61.2	65.2	58.3	63.1	61.95
68.59	— .02	+ .02	1 6.52	312 8 9.95	61.28	1 16 26.06	— 8 58 12.08	5.72	+44.75	60.2	63.4	56.5	61.1	60.30
68.62	+ .20	. . .	. . .	. . . . .	. .	1 58 37.84	. . . . .	5.83	. .	60.6	64.1	56.5	65.5	61.68
										61.0	63.9	58.0	62.1	61.25
68.63	.18	+ .03	0 23.09	335 32 58.69	. .	2 9 18.59	+ 14 26 27.46			60.3	65.2	57.3	63.3	61.53
	.10	— 18.37	23.09	335 32 40.29						60.5	63.5	56.3	60.5	60.20
68.64	.06	+ 0.06	44.45	323 41 49.96	. .	2 35 26.69	+ 2 35 27.93	5.37	36.93	60.4	63.9	57.6	62.4	61.08
68.65	.06	.05	— 43.03	324 35 53.19	. .	2 54 21.45	+ 3 29 21.16	5.33	35.30	60.78	64.44	57.50	62.40	61.28
68.67	.52	+ .11	+ 11.16	10 25 20.22	. .	3 13 31.71	+ 49 18 58.19	6.47	22.58					
68.68	+ .21	— .06	— 16.56	344 44 11.33	. .	3 38 28.56	+ 23 37 49.30	5.74	26.29					
— 68.69	— 0 0.06	— 0 0.12	— 1 20.08	307 9 34.37	. .	3 50 57.18	— 13 56 47.66	+ 4.52	+33.34					

Objects.	COR. IN R.	Observed Semi-diam.	
	Semi-diam.	Hor.	Vert.
	m. s.		′ ″
Jupiter .	+ 1.71	. .	0 21.69
Mars .	. . . .	0 0.54	9 9.20

OBSERVATIONS

WITH THE

PRIME VERTICAL TRANSIT INSTRUMENT,

1847.

NATIONAL OBSERVATORY.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. S.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. S.
Jan. 5	1	Lal. 7206	E.	N.	1 39 47.6	12.5	25.0	38.0	50.5	3.2	15.2	S.	27.0	39.0	52.1	4.8	18.1	21.0	43 56.0
	2		W.	S.	5 48 46.0	11.1	24.0	36.5	50.0	2.6	15.0	N.	26.8	39.0	52.0	4.0	17.0	29.8	52 54.0
	3	ξ Persei	E.	S.	1 53 5.3	19.0	32.8	46.4	59.9	14.0	27.0	N.	26.0	39.0	53.1	7.1	21.0	35.4	56 49.0
	4		W.	N.	5 40 43.6	57.3	11.7	25.0	39.0	53.3	6.1	S.	5.1	18.1	32.5	45.7	59.6	13.6	44 26.5
	5	ρ Persei	E.	N.	2 1 49.2	19.4	50.4	20.8	52.0	21.8	53.6	S.	52.5	25.8	57.9	32.0	6.0	41.4	10 16.5
	6		W.	S.	3 39 56.0	31.8	6.9	42.5	15.5	47.0	20.6	N.	18.4	51.0	19.8	52.0	22.3	53.0	48 23.0
	7	Lal. 7003	E.	S.	2 22 35.8	55.5	16.4	37.0	57.5	19.0	38.5	N.	8.7	29.0	51.5	12.6	34.3	56.7	28 17.9
	8		W.	N.	4 51 10.0	32.3	54.0	16.0	37.0	59.5	20.0	S	50.4	9.5	31.1	51.8	12.8	33.1	56 53.1
	9	α Lyræ	E.	N.	17 53 19.8	27.2	12.4	58.8	46.5	32.0	21.4	S.	36.5	32.7	29.8	30.0	32.7	39.0	71 13.5
	10		W.	S	18 51 33.0	9.0	14.4	18.2	19.0	15.0	11.0	N.	29.0	19.2	4.5	51.8	38.0	23.3	69 31.0
6	11	β Pegasi	E.	N.	19 33 0.0	15.8	31.0	46.5	54.4	2.6	10.2	S.	26.0	34.0	42.1	50.0	5.5	21.1	36 37.0
	12		W.	S.	2 15 28.0	44.0	0.0	15.5	23.3	31.0	39.0	N.	54.2	2.1	10.1	18.0	33.8	48.9	19 5.0
	13	α Andromedæ	E.	S.	20 45 34.9	51.0	7.0	15.0	23.2	31.2	39.1	N.	46.8	54.3	2.9	11.1	19.0	35.3	48 51.5
	14		W.	N.	3 11 29.0	45.2	1.3	9.5	17.5	26.0	33.9	S.	41.8	50.0	57.5	6.0	14.0	30.0	14 46.0
	15	δ Andromedæ	E.	N.	21 32 8.4	25.9	43.3	52.2	1.2	10.1	19.2	S.	27.0	36.2	45.0	54.3	3.2	21.1	35 38.5
	16		W.	S.	3 26 3.0	21.0	38.2	47.2	56.5	5.3	14.5	N.	22.0	31.0	40.0	49.0	58.0	15.5	29 32.8
	17	Lal. 5112	E.	N.	1 14 41.0	0.7	20.0	39.0	59.2	18.0	38.0	S.	49.9	9.7	29.2	49.5	10.0	30.5	19 50.8
	18		W.	S.	3 55 23.5	43.7	4.6	24.5	44.9	4.4	24.3	N.	37.0	57.0	15.2	35.0	54.5	14.1	60 32.9
	19	ρ Persei	E.	N.	2 1 48.2	18.0	48.5	19.9	50.9	20.1	51.9	S.	50.6	24.0	55.4	30.4	4.5	39.5	10 16.0
	20		W.	S.	3 39 54.4	29.5	4.8	39.0	13.5	45.3	18.9	N.	18.5	50.9	20.0	50.8	21.0	51.5	48 22.8
7	†21	α Lyræ	E.	S.	17 54 37.8	20.3	5.0	49.8	34.3	23.3	9.2	N.	47.7	41.3	41.1	40.0	43.0	49.0	68 57.8
	22		W.	N.	18 53 52.2	0.5	6.7	8.2	8.1	8.6	0.0	S.	40.5	25.5	14.5	0.8	44.8	29.6	68 13.8
8	23	α Andromedæ	E.	N.	20 45 37.0	52.6	8.9	16.7	25.1	33.5	41.9	S.	43.4	51.9	0.0	8.3	16.8	32.8	48 49.0
	24		W.	S.	3 11 31.2	47.4	3.9	11.6	20.1	28.2	36.8	N.	39.0	47.0	55.0	3.5	12.0	27.9	14 43.5
	25	δ Andromedæ	E.	S.	21 32 6.0	23.3	40.8	49.5	58.7	7.1	16.0	N.	29.9	38.5	47.2	56.2	5.0	22.9	35 40.4
	26		W.	N.	3 26 1.0	18.5	36.1	44.8	54.0	3.0	11.8	S.	25.0	33.8	42.3	51.5	0.0	17.9	29 35.1
	27	α Arietis	E.	N.	22 1 53.0	6.5	19.9	33.1	40.0	47.0	54.0	S.	58.9	6.0	13.0	19.2	33.0	46.5	5 0.2
	28		W.	S.	5 51 30.0	43.9	57.0	10.6	17.8	24.0	31.5	N.	36.4	43.0	50.5	57.0	9.8	23.8	54 37.3
	29		E.	S.	1 47		32.0	58.1	24.0	51.5	17.0	N.	14.0	39.6	8.5	36.4	5.0		53
	30		W.	N.	3 43		1.5	30.0	58.0	26.5	52.7	S.	49.5	15.0	43.6	8.3	34.0		48
	31	ξ Persei	E.	N.	1 53		35.0	49.0	2.8	16.0	30.0	S.	20.0	34.0	47.6	1.9	16.0		56
	32		W.	S.	5 41		14.3	28.8	42.5	56.0	10.7	N.	0.8	15.0	28.0	41.0	55.0		43
	33	Lal. 7003	E.	S.	2 22 34.0	53.8	14.7	35.0	55.3	16.9	36.9	N.	7.4	27.5	50.0	11.5	32.5	55.5	28 16.5
	34		W.	N.	4 51 10.5	31.4	54.9	16.0	37.0	59.5	19.9	S.	49.1	9.4	31.0	51.2	11.2	33.8	56 52.2
	35	(1269)	E.	S.	2 46 39.6	2.0	23.8	45.8	8.5	31.5	53.0	N.	32.4	54.1	18.2	41.5	5.5	29.5	52 52.7
	36		W.	N.	5 3 22.0	45.8	11.0	34.6	56.0	21.5	43.7	S.	22.3	45.1	8.2	30.0	52.0	14.6	9 37.5
	37	Lal. 7994	E.	N.	2 57 17.0	39.0	0.0	24.0	45.5	7.5	31.5	S.	55.0	18.2	40.5	5.0	28.5	53.0	63 17.0
	38		W.	S.	5 14 45.0	8.7	33.2	57.0	21.3	44.0	7.0	N.	29.9	52.0	14.0	37.0	0.0	22.5	20 45.5
14	39	(661)	E.	N.	1 10 30.0	0.0	33.3	4.5	38.0	9.2	43.0	S.	50.1	26.0	59.5	36.2	13.0	52.0	19 28.5
	40		W.	S.	2 42 58.5	36.8	14.0	51.8	28.2	2.0	37.8	N.	44.5	18.2	50.0	23.0	55.0	27.0	51 59.0
	41	(662)	E.	S.	1 10 38.0	10.0	42.0	15.0	48.0	19.2	53.0	S.	0.0	36.0	10.0	47.1	24.0	3.0	19 40.0
	42		W.	N.	2 42 49.8	27.6	5.4	42.7	19.9	53.6	29.5	N.	36.0	10.0	41.8	14.6	47.0	18.8	51 51.4

DATE.	CLOCK. +AZIMUTH.	CLOCK'S HOURLY RATE.
	h. s.	s.
Jan. 5,	3 + 18.84	+ 0.026
6,	1 19.20	.018
8,	2 19.71	.011
14,	4 24.56	.020

21. Wind high ; star unsteady.
22. Steadier, but still not good.
41. Hazy ; stars not steady.
17, 19. First level reading rejected.

LEVEL READINGS.			Corr. for level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED		REDUCTION TO 1850.0		Magnitude.	Observer.	OBJECT.
Means.		S. — N.				R.Ascension.	N.Declination.	R. A.	Decl.			
N.	S.	Div.	"	H. M. S.	S.	H. M. S.	° ' "	S.	"			
17.10	18.55	+1.45	+1.31	3 46 21.00	+18.81	3 46 39.81	34 37 44.34	+ 9.56	+31.92	6	H*	Lal. 7206.
18.65	20.70	2.05										
17.10	18.50	1.40	1.27	3 48 46.15	18.80	3 49 4.95	35 20 47.67	9.60	31.07	4.5		ξ Persei.
18.65	20.65	2.00										
17.20	18.50	1.30	0.97	2 55 6.40	18.84	2 55 25.24	38 14 41.63	9.61	37.65	..		ρ Persei.
18.20	19.50	1.30										
17.22	18.85	1.63	1.32	3 39 44.32	18.83	3 40 3.15	37 24 13.53	9.69	32.24	9		Lal. 7003.
18.45	20.35	1.90										
21.25	22.55	1.30	0.71	18 31 24.63	19.32	18 31 43.95	38 38 46.82	7.40	3.03	..		α Lyræ.
20.85	21.45	0.60										
18.80	22.15	3.35	1.43	22 56 2.47	19.27	22 56 21.74	27 15 28.99	8.69	46.63	..		β Pegasi.
17.12	17.60	0.48										
18.12	20.00	1.88	1.02	0 0 10.34	19.22	0 0 29.56	28 14 57.02	8.80	49.05	..		α Andromedæ.
17.25	18.10	0.85										
17.60	19.15	1.55	1.19	0 30 50.70	19.19	0 31 9.89	30 1 34.74	8.86	48.94	..		δ Andromedæ.
17.00	18.62	1.62										
14.25	20.00	5.75	1.18	2 37 37.18	19.58	2 37 56.76	37 8 52.72	9.45	40.10	9		Lal. 5112.
17.27	18.85	1.58										
14.30	20.35	6.05	1.26	2 55 4.96	20.27	2 55 25.23	38 14 41.77	9.63	37.63	..		ρ Persei.
17.10	18.78	1.68										
30.30	32.00	1.70	1.39	18 31 24.76	19.51	18 31 44.27	38 38 46.77	7.38	3.69	..		α Lyræ.
31.00	33.00	2.00										
31.02	32.60	1.58	1.70	0 0 10.18	19.62	0 0 29.80	28 14 56.45	8.83	49.34	..		α Andromedæ.
30.34	33.30	2.96										
31.00	32.20	1.20	1.79	0 30 50.58	19.57	0 31 10.15	30 1 34.41	8.90	49.19	..		δ Andromedæ.
30.07	33.65	3.58										
30.60	32.60	2.00	2.20	1 58 15.10	19.66	1 58 34.76	22 44 15.15	8.96	47.98	..		α Arietis.
30.68	34.55	3.87										
30.55	33.47	2.92	2.30	2 48 3.26	19.66	2 48 22.92	37 59 51.17	9.57	38.71	7		Anon.
30.35	33.57	3.22										
30.55	33.48	2.93	2.37	3 48 45.22	19.69	3 49 4.91	35 20 47.21	9.62	31.15	..		ξ Persei.
30.95	34.35	3.40										
30.50	33.30	2.80	2.29	3 39 43.38	19.66	3 40 3.04	37 24 12.90	9.72	32.11	..		Lal. 7003.
30.60	33.90	3.30										
30.50	33.20	2.70	2.36	3 58 7.94	19.57	3 58 27.51	37 38 3.04	9.80	28.67	7		(1269)
30.55	34.15	3.60										
30.45	33.42	2.97	2.48	4 9 0.67	19.62	4 9 20.29	37 37 13.32	9.81	27.52	9		Lal. 7994.
30.60	34.25	3.65										
23.00	28.55	5.55	4.16	2 1 13.90	24.52	2 1 38.42	38 19 1.52	9.47	43.33	7		(661)
22.95	28.50	5.55										
23.00	28.55	5.55	+4.16	2 1 14.76	+24.52	2 1 39.28	38 19 15.33	+9.47	+43.33	8		(662)
22.95	28.50	+5.55										

*H. Lieut. Herndon.

ASSUMED LATITUDE 38° 53′ 38″.80 NORTH.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. S.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
Jan. 14	1	Anon.	E	S.	1 27 24.2	41.1	58.6	16.0	33.0	51.0	7.1	N.	20.8	37.3	55.9	13.3	30.9	49.1	32 7.0
	2		W.	N.	4 27 42.0	59.8	18.0	35.7	53.0	11.5	28.5	S.	42.0	58.1	16.9	33.2	50.5	8.5	32 25.2
	3	(888)	E.	N.	1 34 ..	42.5	5.3	28.9	52.4	15.0	38.2	S.	7.7	32.0	54.5	20.1	45.0	10.0	40 ..
	4		W.	S.	3 47 ..	12.5	37.3	2.4	27.4	50.1	15.0	N.	43.8	7.5	29.9	53.0	17.3	40.0	52 ..
	5	Lal. 6820	E.	S.	1 48 42.0	56.6	12.0	26.8	41.5	57.0	11.0	N.	15.0	29.8	45.2	1.0	16.0	31.6	52 47.0
	6		W.	N.	5 15 43.7	59.0	14.2	30.0	44.8	1.3	15.6	S.	19.6	34.0	49.5	4.5	19.3	34.5	19 49.2
	7	ξ Persei	E.	N.	1 53 2.0	16.0	29.8	43.0	57.8	10.5	24.0	S.	15.6	29.8	43.0	57.0	11.5	26.0	56 40.0
	8		W.	S.	5 40 40.9	55.0	9.0	23.4	37.5	50.8	4.9	N.	56.3	10.0	23.0	37.0	51.2	4.9	44 18.9
	9	(1123)	E.	S.	2 6 22.2	41.0	0.0	18.8	37.5	57.3	15.0	N.	35.7	54.0	14.5	33.7	53.0	13.0	11 33.0
	10		W.	N.	4 50 3.5	23.7	43.5	3.0	21.6	42.0	0.6	S.	22.0	40.0	0.0	18.2	36.8	55.9	55 15.0
	11	Anon.	E	N.	2 15 44.2	1.4	17.9	35.0	52.3	8.1	25.0	S.	28.2	45.6	2.0	19.3	37.0	54.8	20 12.0
	12		W.	S.	5 21 30.0	47.5	5.0	22.5	40.0	56.8	14.0	N.	16.5	33.3	49.5	6.8	23.6	40.7	25 57.2
	13	Lal. 6532	E.	S.	2 26 ..	..	28.0	55.5	22.0	51.5	17.0	N.	17.7	44.8	15.1	44.0	14.0	..	32 ..
	14		W.	N.	4 17 ..	..	15.0	44.5	14.0	44.8	11.2	S.	11.7	37.0	5.9	32.9	1.0	..	23 ..
	15	(1492)	E.	N.	3 4 46.2	3.0	19.4	36.0	52.9	8.6	24.9	S.	26.5	43.8	59.0	16.8	33.2	50.5	9 7.8
	16		W.	S.	6 14 55.5	12.4	29.6	46.5	3.5	19.8	36.0	N.	37.1	54.5	10.0	26.9	43.2	0.5	19 16.6
	17	(1476)	E.	S.	3 17 40.0	58.0	18.1	38.0	57.8	17.0	36.0	N.	0.0	19.1	40.5	0.4	20.5	41.0	23 2.0
	18		W.	N.	5 55 27.5	48.5	9.0	28.6	49.1	9.7	29.0	S.	53.0	11.5	31.0	51.0	11.0	30.5	60 50.0
27	19	Lal. 12805	E.	S.	4 0 51.0	11.8	32.8	42.5	53.0	3.2	13.5	N.	41.0	51.2	1.9	12.7	23.0	44.0	5 5.0
	20		W.	N.	8 59 3.0	24.2	45.2	56.0	6.8	17.0	27.5	S.	54.2	4.9	15.0	25.5	35.9	56.5	63 17.0
	21	Anon.	E.	N.	4 14 30.0	46.5	..	20.0	37.0	53.0	10.0	S.	10.8	28.3	44.0	1.5	..	36.0	18 53.0
	22		W.	S.	7 22 15.5	32.7	..	7.7	25.0	41.0	58.0	N.	59.5	16.8	32.0	49.5	..	22.8	26 39.8
	23	Anon.	E.	N.	4 14 31.8	48.2	5.3	22.0	39.0	55.0	12.0	S.	12.5	30.0	46.0	3.4	20.8	37.9	18 55.0
	24		W.	S.	7 22 12.5	30.0	47.5	5.0	22.0	38.0	55.2	N.	57.0	14.0	29.2	46.5	3.2	20.0	26 37.0
	25	ϑ Aurigæ	E.	S.	4 27 ..	..	..	..	..	54.7	14.9	33.0	N.	58.7	17.0	38.2	..	..	..	30 ..
	26		W.	N.	5 6 ..	..	..	..	..	32.0	54.0	12.8	S.	37.8	55.0	16.0	..	..	..	9 ..
	27	(1935)	E.	S.	4 51 25.3	51.0	16.9	42.5	7.8	35.5	59.7	N.	54.4	20.0	48.8	16.0	43.7	12.2	58 40.5
	28		W.	N.	6 49 0.9	30.1	58.0	26.5	53.0	22.0	47.0	S.	42.2	6.1	33.6	59.1	24.6	50.2	56 15.9
	29	Lal. 13601	E.	N.	5 4 37.8	52.2	7.5	21.7	36.5	..	..	S.	..	..	27.5	42.6	57.4	12.7	8 28.0
	30		W.	S.	8 39 15.4	30.0	45.6	0.1	15.8	..	..	N.	..	..	7.5	22.0	36.8	51.1	43 6.0
	31	(2416)	E.	S.	5 45 46.1	4.6	23.5	42.0	0.5	20.0	37.5	N.	59.1	16.6	36.8	56.0	15.5	35.0	50 54.6
	32		W.	N.	8 31 19.1	38.9	58.3	17.9	37.0	57.0	15.0	S.	35.9	53.0	13.0	31.6	50.5	9.0	36 27.3
	33	Lal. 15196	E.	S	6 24 36.5	58.0	18.7	40.0	0.5	22.5	43.0	N.	16.0	36.0	58.8	20.8	42.3	4.8	30 27.5
	34		W.	N.	8 50 20.5	42.9	5.6	28.0	49.8	12.9	32.6	S.	5.5	24.8	47.0	8.0	29.0	50.0	56 11.0
Feb. 1	35	Lal. 7003	E.	S.	2 21 57.4	17.8	38.4	..	..	..	..	N.	..	..	..	..	56.0	17.9	27 39.8
	36		W.	N.	4 50 31.5	54.0	16.0	..	..	..	..	S.	..	..	..	..	34.0	54.9	56 15.5
	37	(1492)	E.	S.	3 4 11.9	27.7	43.8	0.1	16.3	33.9	48.7	N.	59.5	14.5	32.0	49.0	5.9	22.0	8 39.2
	38		W.	N.	6 14 18.0	35.6	52.0	8.7	25.2	42.8	58.0	S.	9.5	24.8	42.0	58.4	14.8	30.5	18 47.0
	39	(1476)	E.	N.	3 17 11.6	31.0	51.0	11.0	31.0	50.0	10.0	S.	23.2	43.9	3.6	23.9	43.9	5.8	22 26.0
	40		W.	S.	5 54 58.5	18.1	39.3	0.0	20.9	40.1	0.5	N.	14.0	34.2	53.4	13.0	32.5	52.2	60 12.5
4	41	Lal. 11471	E.	N.	4 0 9.0	22.2	36.5	50.4	4.5	17.6	31.5	S.	21.8	35.6	49.1	3.8	18.0	32.0	3 46.8
	42		W.	S.	7 45 59.0	13.3	27.9	42.0	56.1	10.0	24.0	N.	15.2	29.1	42.0	56.5	10.5	24.7	49 38.6

DATE.	CLOCK + AZIMUTH.	CLOCK'S HOURLY RATE.
d. h.	s.	s.
Jan. 14, 4	+24.56	+0.020
27, 6	44.22	.084
Feb. 1, 5	56.89	.100
4, 5	63.92	.100

21 and 23. Observed at the same time.

LEVEL READINGS. Means. N.	Means. S.	S.—N.	Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED R. Ascension.	OBSERVED N. Declination.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 Decl.	Magnitude.	Observer.	OBJECT.
N.	S.	Div.	"	H. M. S	S.	H. M. S.	° ′ ″	S.	″			
23.00	28.60	+5.60	+3.82	2 59 54.58	+ 24.67	3 0 19.25	36 41 24.08	+ 9.65	+37.67	9	H.	Anon.
24.52	29.11	4.59										
23.15	28.45	5.30	3.83	2 43 41.16	24.61	2 44 5.77	37 42 44.04	9.64	39.32	..		(888)
24.05	28.95	4.90										
23.10	28.45	5.35	3.96	3 34 15.42	24.58	3 34 40.00	35 58 22.91	9.70	33.16	6		Lal. 6820.
24.80	30.00	5.20										
23.10	28.45	5.35	3.84	3 48 40.31	24.61	3 49 4.92	35 20 48.42	9.69	31.14	5		ξ Persei.
25.10	29.98	4.88										
23.10	28.40	5.30	3.91	3 30 48.37	24.58	3 31 12.95	37 4 56.45	9.83	33.36	7		(1123)
24.55	29.67	5.12										
22.95	28.40	5.45	3.94	3 50 50.94	24.61	3 51 15.55	36 33 8.39	9.77	30.48	8.9		Anon.
24.97	30.02	5.05										
22.80	28.50	5.70	4.15	3 24 44.38	24.62	3 25 9.00	38 4 11.86	9.80	33.95	9		Lal. 6532.
24.10	29.45	5.35										
23.22	28.15	4.93	3.57	4 42 1.45	24.61	4 42 26.06	36 26 17.99	9.90	21.91	5.6		(1492)
25.55	30.12	4.57										
23.45	28.67	5.22	3.76	4 39 14.56	24.62	4 39 39.18	37 12 42.84	9.90	22.14	6.7		(1476)
25.25	30.05	4.80										
35.25	36.65	1.40	1.03	6 32 8.16	44.26	6 32 52.42	32 41 49.27	9.51	0.10	8		Lal. 12805.
36.80	38.15	1.35										
35.25	36.65	1.40	0.94	5 50 34.14	44.24	5 51 18.38	36 30 6.53	9.91	7.72	10		Anon.
36.45	37.55	1.10										
35.25	36.65	1.40	0.94	5 50 34.60	44.24	5 51 18.84	36 29 59.25	9.91	7.72	11		Anon.
36.45	37.55	1.10										
35.32	36.75	1.43	0.97	5 48 35.45	44.24	5 49 19.69	37 11 39.73	9.98	7.65	4		ϑ Aurigæ.
36.40	37.55	1.15										
35.40	36.95	1.55	1.03	5 53 50.84	44.29	5 54 35.13	37 57 45.59	10.03	+6.77	8		(1935)
36.30	37.50	1.20										
35.45	37.22	1.77	1.17	6 53 51.74	44.33	6 54 36.07	35 44 56.37	9.68	—4.67	10		Lal. 13601.
36.80	38.15	1.35										
35.70	37.25	1.55	1.16	7 11 6.84	44.32	7 11 51.16	37 2 22.90	9.71	8.32	..		(2416)
36.60	38.15	1.55										
35.85	37.50	1.65	1.14	7 40 24.04	44.39	7 41 8.43	37 27 39.46	9.61	—13.89	8		Lal. 15196.
36.80	38.20	1.40										
29.65	31.70	2.05	1.54	3 39 6.09	56.76	3 40 2.85	37 24 13.78	10.10	+31.49	8.9		Lal. 7003.
31.05	33.10	2.05										
29.62	32.42	2.80	1.99	4 41 29.00	56.89	4 42 25.89	36 26 18.43	10.05	20.77	6		(1492)
31.90	34.40	2.50										
29.50	32.80	3.30	2.09	4 38 41.97	57.01	4 39 38.98	37 12 43.79	10.10	21.06	6.7		(1476)
31.85	34.10	2.25										
35.60	38.02	2.42	+1.75	5 54 53.13	+ 64.03	5 55 57.16	35 24 11.73	+ 9.89	+ 6.33	8		Lal. 11471.
37.17	39.42	+2.25										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G	F.	E.	D.	C.	B.	A.
					H. M. s.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
Feb. 4	1	μ Aurigæ	E.	S.	4 10 23.0	53.8	24.9	56.0	27.5	1.3	30.8	N.	53.0	24.7	1.9	36.0	12.0	48.4	19 25.1
	2		W.	N.	5 44 27.4	3.5	40.6	16.0	50.8	27.8	59.1	S.	21.0	50.5	24.8	55.8	27.0	58.0	53 28.9
	3	θ Aurigæ	E.	N.	4 26 21.7	41.1	1.0	20.9	40.9	59.8	19.5	S.	32.0	52.0	11.9	32.0	53.0	13.6	31 34.4
	4		W.	S.	7 4 56.2	17.1	37.5	58.3	19.1	38.2	59.0	N.	12.0	31.9	50.8	10.8	30.3	50.0	10 9.4
6	5	α Arietis	E.	S.	22 2 4.1	17.8	31.0	44.2	51.1	58.0	4.8	N.	14.7	21.5	28.2	35.1	48.2	2.2	5 15.4
	6		W.	N.	5 51 41.5	55.0	8.4	21.9	28.5	35.5	42.1	S.	52.3	59.5	6.0	12.9	26.2	39.8	54 53.0
	7	Lal. 10871	E.	S.	3 38 9.5	22.6	35.9	49.0	1.9	16.0	28.0	N.	25.5	38.0	51 9	5.5	18.0	32.0	41 45.7
	8		W.	N.	7 33 32.7	46.0	59.2	12.9	26.0	40.2	52.5	S.	49.0	1.5	15.8	28.8	42.0	54.5	37 8.4
	9	(2110)	E.	N.	3 49 57.8	18.0	28.6	39.0	50.0	0.4	10.2	S.	9.0	19.0	30.0	40.5	51.0	1.8	53 22.5
	10		W.	S.	8 51 25.6	46.8	57.1	8.0	18.4	29.0	39.2	N.	38.5	48.2	59.4	9.5	19.9	30.5	54 51.0
	11	Lal. 11471	E.	S.	4 1 2.0	16.0	29.5	43.5	56.8	11.1	24.0	N.	24.0	36.0	51.2	5.0	19.5	33.2	4 47.0
	12		W.	N.	7 46 54.1	8.2	22.3	36.5	50.1	5.1	18.1	S.	17.3	30.0	44.8	58.5	12.1	25.8	50 39.5
	13	υ Aurigæ	E.	N.	4 20 ..	..	38.5	59.0	19.4	39.0	58.8	S.	12.5	32.9	53.0	13.8	35.0	..	24 ..
	14		W.	S.	6 56 ..	..	30.0	50.5	11.5	31.2	52.0	N.	6.8	27.0	46.0	6.1	26.2	..	60 ..
	15	ϑ Aurigæ	E.	S.	4 27 15.0	34.5	53.7	13.0	32.0	52.8	10.9	N.	35.4	53.8	15.0	34.9	55.0	15.9	32 36.9
	16		W.	N.	7 5 50.5	10.6	31.4	51.1	11.4	32.5	51.5	S.	15.9	33.4	53.8	13.2	32.7	52.2	11 11.1
	17	Lal. 12849	E.	N.	4 53 13.0	29.2	44.9	0.4	17.0	32.5	48.5	S.	46.9	3.0	18.7	34.9	51.0	8.0	57 24.4
	18		W.	S.	8 10 18.0	34.8	50.8	7.1	23.8	39.0	55.2	N.	54.0	10.1	25.2	41.5	57.4	13.3	14 29.3
	19	(1947)	E.	S.	4 58 ..	53.5	20.5	48.5	15.5	45.8	16.8	N.	13.1	40.3	11.0	41.2	11.5	42.1	65 ..
	20		W.	N.	6 48 ..	12.4	43.0	13.2	42.9	14.0	40.6	S.	43.0	8.9	38.0	6.0	33.0	0.8	55 ..
	21	Lal. 13569	E.	N.	5 18 10.6	27.5	44.2	1.0	18.2	34.0	51.2	S.	53.1	10.0	26.5	44.0	1.1	18.6	22 36.5
	22		W.	S.	8 24 50.5	7.7	25.2	42.5	0.1	16.4	33.9	N.	36.0	52.8	8.9	26.0	42.9	59.5	29 16.5
14	23	Lal. 11471	E.	N.	4 1 16.1	30.2	44.0	58.0	12.0	25.5	39.6	S.	30.0	44.5	57.7	12.0	26.1	40.5	4 54.8
	24		W.	S.	7 47 7.0	21.1	36.1	50.2	4.8	18.0	32.1	N.	23.0	36.9	50.5	4.2	18.4	32.3	50 46.3
	25	υ Aurigæ	E.	S.	4 20 5.5	25.4	45.0	4.5	24.0	45.0	3.2	N.	29.9	48.5	10.1	30.5	50.9	12.0	25 32.9
	26		W.	N.	6 55 52.8	13.3	34.0	55.1	15.2	37.0	55.7	S.	22.0	40.5	1.5	21.0	41.0	0.6	61 20.0
	27	ϑ Aurigæ	E.	N.	4 27 30.5	50.1	10.0	29.5	49.5	8.2	28.5	S.	40.4	0.5	20.0	40.8	1.5	22.0	32 42.5
	28		W.	S.	7 6 3.9	25.0	45.6	5.8	26.5	46.0	6.5	N.	19.0	39.0	58.5	18.0	37.6	57.6	11 17.0
	29	Lal. 10666	E.	S.	4 35 ..	..	34.8	2.6	30.4	0.0	26.0	N.	31.2	59.0	31.0	0.5	31.1	..	41 ..
	30		W.	N.	6 23 ..	..	15.8	46.2	16.8	48.5	16.6	S.	21.0	47.6	17.6	45.0	12.5	..	29 ..
	31	Lal. 13569	E.	N.	5 18 21.8	38.8	55.0	12.0	29.5	45.0	2.0	S.	4.0	21.5	38.0	55.0	12.5	29.9	22 47.5
	32		W.	S.	8 25 0.0	17.5	34.7	52.5	10.0	26.0	43.2	N.	45.2	2.8	18.8	35.9	52.6	9.5	29 26.2
	33	(2270)	E.	S.	5 55 40.4	10.9	41.0	11.3	40.5	14.0	42.8	N.	59.9	30.9	6.0	40.0	14.0	49.0	64 24.3
	34		W.	N.	7 33 2.8	37.3	11.9	46.6	20.8	56.5	27.0	S.	44.0	13.0	46.1	16.0	46.0	16.5	41 46.8
23	35	p Geminorum	E.	N.	4 41 20.0	39.9	59.9	9.1	19.3	30.0	40.4	S.	45.1	55.0	5.2	16.0	25.7	36.0	44 56.1
	36		W.	S.	9 53 24.7	44.9	4.9	15.0	25.5	35.7	45.9	N.	1.0	11.0	21.0	32.0	41.5	1.7	57 21.1
	37	α^2 Geminorum	E.	S	4 48 ..	58.0	8.1	18.1	28.2	38.2	..	N.	..	3.9	14.0	24.0	34.1	44.2	51 ..
	38		W.	N.	9 58 ..	4.5	15.0	25.0	35.5	45.5	..	S.	..	10.8	20.8	30.2	40.0	50.5	60 ..
	39	Lal. 12798	E.	N.	5 13 10.5	29.4	49.8	10.6	31.3	50.7	11.0	S.	22.9	43.7	4.0	24.2	45.0	7.0	18 29.0
	40		W.	S.	7 47 20.5	42.1	2.8	25.0	46.0	5.8	26.2	N.	39.0	0.0	18.2	38.5	59.8	20.0	52 40.0
	41	(2504)	E.	S.	5 33 27.1	41.1	54.7	8.2	21.5	36.0	48.7	N.	50.5	3.4	17.8	32.0	46.0	59.8	37 14.0
	42		W.	N.	9 19 55.0	9.0	22.8	37.1	50.8	5.9	18.8	S.	19.5	32.2	47.1	1.0	14.0	28.0	23 42.0

DATE.	CLOCK +AZIMUTH.	CLOCK'S HOURLY RATE.
	h. s.	s.
Feb. 4,	5 + 63.92	+0.100
6,	5 + 6.10	0.050
14,	6 − 4.22	0.050
23,	7 2.51	0.062

Feb. 5 Clock regulated and adjusted at 21h.
Feb 6. Level readings very unsatisfactory, and not used: the adopted level correction, + 2″56 was obtained by comparison with the declinations determined on other dates.
Feb. 14. Adjusted level, before observing.
Feb 15. Clock again regulated.

LEVEL READINGS.			Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED		REDUCTION TO 1850.0		Magnitude.	Observer.	OBJECT.
Means.		S. — N.				R. Ascension.	N Declination.	R. A.	Decl.			
N.	S.	Div.	"	H. M. S.	s.	H. M. S.	° ′ ″	s.	″			
35.95	38.00	+2.05	+1.76	5 1 56.06	+ 63.77	5 2 59.83	38 17 48.16	+10.24	+16.15	7	H.	μ Aurigæ.
36.20	38.85	2.65										
35.80	38.25	2.45	1.67	5 48 15.51	64.06	5 49 19.57	37 11 40.03	10.07	6.87	4		ϑ Aurigæ
37.05	39.05	2.00										
15.90	20.62	4.72	. .	1 58 28.53	5.95	1 58 34.48	22 44 16.62	9.40	49.98	..		a Arietis.
14.27	21.05	6.78										
14.20	20.12	5.92	. .	5 37 38.89	6.13	5 37 45.02	35 5 41.45	9.94	9.83	8.9		Lal. 10871.
15.42	22.37	6.95										
14.15	20.40	6.25	. .	6 22 24.23	6.17	6 22 30.40	32 33 21.31	9.60	1.45	8		(2110)
17.90	21.35	3.45										
14.20	20.50	6.30	. .	5 55 50.76	6.15	5 55 56.91	35 24 11.26	9.92	6.22	8		Lal. 11474.
17.10	20.97	3.87										
14.65	19.15	4.50	. .	5 40 32.46	6.13	5 40 38.59	37 15 15.44	10.11	8.85	6.7		ν Aurigæ.
15.05	21.85	6.80										
14.10	19.87	5.77	. .	5 49 13.22	6.14	5 49 19 36	37 11 40.57	10.08	+ 6.77	4		ϑ Aurigæ.
15.05	22.02	6.97										
14.15	20.00	5.85	. .	6 33 51.14	6.17	6 33 57 31	36 15 8.19	9.85	— 1.76	8		Lal. 12849.
17.52	20.95	3.43										
14.10	20.15	6.05	. .	5 56 57.06	6.15	5 57 3 21	38 5 25.66	10.14	+ 5.10	10		(1947)
15.02	21.50	6.48										
14.10	20.42	6.32	. .	6 53 43.41	+ 6.20	6 53 49.61	36 31 43.48	9.78	— 5.85	9		Lal. 13569.
15.95	22.90	6.95										
16.80	19.15	2.35	1.35	5 56 1.14	— 4.11	5 55 57.03	35 24 12.07	10.03	+ 5.82	8		Lal. 11471.
17.90	19.15	1.25										
17.25	18.55	1.30	0.98	5 40 42.75	4.24	5 40 38.51	37 15 15.48	10.25	8.42	6.7		ν Aurigæ.
17.70	19.00	1.30										
17.27	18.57	1.30	0.88	5 49 23.58	4.20	5 49 19.38	37 11 41.09	10.21	6.30	4		ϑ Aurigæ.
17.85	18.90	1.05										
17.22	18.57	1.35	0.92	5 32 23.71	4.19	5 32 19.52	38 6 52.14	10.34	+ 9.88	9.10		Lal. 10666.
17.55	18.65	1.10										
17.40	18.52	1.12	0.97	6 53 53.84	4.20	6 53 49.64	36 31 44.14	9.86	— 6.48	9.10		Lal. 13569.
17.95	19.35	1.40										
17.50	18.50	1.09	0.82	6 48 43.44	4.22	6 48 39.22	38 15 15.56	10.04	6.14	8		(2270)
17.90	19.07	1.17										
18.00	19.15	+1.15	0.40	7 19 20.52	2.42	7 19 18.10	32 4 50.82	9.50	10.61	7		ρ Geminorum.
20.62	20.55	—0.07										
18.50	19.15	+1.15	0.61	7 24 54.43	2.45	7 24 51.98	32 12 57.72	9.44	12.33	..		a^2 Geminorum.
20.45	20.95	0.50										
18.15	19.45	1.30	1.22	6 32 54.75	2.63	6 32 52.12	37 17 18.02	10.18	3.00	9		Lal. 12798.
19.00	20.95	1.95										
18.05	19.95	1.90	+1.03	7 28 34.43	— 2.38	7 28 32.05	35 23 1.12	+ 9.69	—13.86	8		(2504)
20.10	20.95	+ 0.85										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. S.	s.	s	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
Feb. 23	1	(2416)	E.	N.	5 46 39.9	58.9	17.9	36.0	56.0	13.0	33.0	S.	39.0	59.5	17.5	37.8	57.3	17.0	51 37.0
	2		W.	S.	8 32 10.0	30.0	49.9	9.5	29.2	46.8	6.3	N.	13.7	33.0	51.0	10.0	29.1	48.0	37 7.0
	3	(2270)	E.	S.	5 56 ..	7.0	37.2	7.0	37.8	11.6	39.5	N.	1.5	32.6	7.9	42.5	16.1	51.4	63 ..
	4		W.	N.	7 33 ..	32.5	7.0	41.4	15.1	51.0	21.1	S.	44.4	12.0	46.0	15.3	45.8	16.4	41 ..
	5	Lal. 15235	E.	N.	6 9 7.0	24.2	41.0	58.5	16.0	33.0	49.9	S.	50.5	8.5	25.5	43.0	2.0	19.2	13 37.2
	6		W.	S.	9 10 52.2	10.0	27.8	46.0	3.4	20.2	38.2	N.	38.5	56.8	13.3	30.8	48.0	5.0	15 22.0
	7	Lal. 15196	E.	S.	6 25 ..	45.0	6.0	27.0	48.0	10.2	29.9	N.	4.8	25.0	49.0	10.8	32.9	55.0	30 ..
	8		W.	N.	8 51 ..	26.9	48.0	11.0	32.9	55.9	16.0	S.	51.5	11.3	33.5	54.5	15.3	36.0	56 ..
	9	Lal. 14484	E.	N.	6 35 35.0	11.5	48.1	27.5	4.2	40.0	20.2	S.	41.2	25.0	4.2	49.5	34.9	20.0	46 6.8
	10		W.	S.	7 53 40.2	27.0	14.8	57.8	41.5	23.0	6.0	N.	26.5	7.7	42.2	20.4	59.8	35.0	64 13.2
March 5	11	α Arietis	E.	N.	22 2 4.2	18.0	31.5	45.0	51.9	..	5.5	S.	13.2	..	27.0	34.0	47.2	1.0	5 15.0
	12		W.	S.	5 51 41.0	55.0	8.5	22.0	29.0	..	43.0	N.	50.0	..	4.0	11.0	24.1	37.1	54 51.4
	13	α Tauri	E.	S.	23 50 5.4	17.0	28.8	40.5	46.0	52.5	58.2	N.	58.0	4.2	10.0	16.0	28.0	40.0	52 52.0
	14		W.	N.	9 1 14.8	26.7	38.6	50.5	56.0	2.5	8.5	S.	9.2	15.0	21.0	27.0	39.0	50.6	4 2.5
	15	ϑ Geminorum	E.	N.	4 29 47.1	59.0	11.0	23.1	35.2	46.9	58.9	S.	46.9	59.0	10.5	23.0	35.4	47.5	33 0.0
	16		W.	S.	8 52 15.0	27.0	39.6	52.0	4.0	16.0	28.0	N.	16.0	28.0	39.2	51.3	3.2	15.5	55 27.5
	17	ρ Geminorum	E.	S.	4 41 29.5	49.2	59.1	9.0	19.0	28.9	39.2	N.	37.5	48.0	58.4	8.5	18.3	28.2	44 48.2
	18		W.	N.	9 53 34.0	53.8	4.0	14.0	24.0	34.0	44.8	S.	42.8	53.5	3.0	13.0	23.0	33.0	56 52.9
	19	(1935)	E.	N.	4 52 6.0	31.0	57.3	23.6	49.8	14.9	41.9	S.	30.5	58.5	24.9	53.0	21.5	49.6	59 18.8
	20		W.	S.	6 49 37.5	7.0	34.9	3.6	31.3	58.1	26.0	N.	13.5	40.5	5.5	32.2	57.9	23.6	56 50.4
	21	Lal. 13601	E.	S.	5 5 15.5	29.7	44.2	59.0	13.0	28.1	42.0	N.	39.0	52.5	8.2	22.4	37.1	52.5	9 7.2
	22		W.	N.	8 39 50.0	5.0	20.0	34.5	49.6	5.0	18.5	S.	16.0	29.2	44.8	59.1	13.7	28.0	43 42.4
	23	Lal. 12173	E.	N.	5 17 44.5	12.9	41.0	10.0	38.6	6.2	35.5	S.	34.1	4.5	34.0	5.5	36.5	8.3	25 40.9
	24		W.	S.	7 4 36.2	8.0	39.9	11.8	42.1	12.3	42.5	N.	42.0	10.8	37.5	6.6	35.9	3.6	12 32.0
	25	(2416)	E.	N.	5 47 ..	..	4.0	22.9	41.9	0.1	19.0	S.	34.3	55.0	12.8	33.0	53.0	..	50 ..
	26		W.	S.	8 32 ..	..	35.0	54.0	14.2	32.6	52.5	N.	8.5	28.5	46.0	5.3	24.0	..	36 ..
	27	Lal. 15235	E.	S.	6 8 55.8	13.0	29.9	47.0	4.0	21.8	37.3	N.	45.2	1.5	19.6	37.2	54.9	12.0	13 30.5
	28		W.	N.	9 10 40.0	58.0	15.0	33.0	49.2	8.9	25.5	S.	33.0	49.2	6.7	23.1	41.0	57.0	15 14.5
	29	Lal. 16413	E.	N.	6 21 55.0	8.5	22.5	36.7	..	..	..	S.	..	..	..	58.5	12.9	27.0	25 41.8
	30		W.	S.	10 4 42.2	56.0	11.0	25.5	..	..	..	N.	..	..	..	47.2	1.5	15.0	8 29.9
	31	Lal. 14484	E.	N.	6 35 17.0	54.0	30.2	9.0	46.8	23.2	1.5	S.	43.5	26.3	7.5	50.8	37.0	23.0	46 10.3
	32		W.	S.	7 53 19.2	6.4	51.9	36.1	22.0	2.8	45.0	N.	27.0	6.2	43.0	20.5	56.8	33.9	64 10.5
6	33	(1935)	E.	S.	4 52 8.0	33.6	59.1	24.8	..	..	..	N.	..	..	..	47.3	15.0	43.0	59 12.0
	34		W.	N.	6 49 40.0	8.5	36.8	4.3	..	..	..	S.	..	..	..	28.0	53.0	19.0	56 44.5
	35	Lal. 12173	E.	S.	5 19 ..	..	..	10.8	38.2	8.9	35.0	N.	29.5	57.0	29.8	59.8	..	..	23 ..
	36		W.	N.	7 6 ..	..	..	13.7	43.2	15.1	43.3	S.	37.0	4.2	35.4	2.2	..	..	11 ..
10	37	Lal. 12503	E.	S.	5 50 41.4	4.6	29.4	55.2	21.4	47.0	..	N.	..	31.5	0.0	28.5	57.5	27.3	56 56.7
	38		W.	N.	6 50 57.0	25.0	55.2	23.8	52.0	20.0	..	S.	..	4.5	30.7	56.2	22.0	46.8	57 11.0
18	39	Lal. 17182	E.	S.	7 29 52.0	16.0	40.0	4.3	28.5	54.1	17.0	N.	54.5	18.0	45.0	11.0	37.0	3.0	36 29.8
	40		W.	N.	9 34 50.8	17.6	44.0	9.8	35.6	2.7	26.0	S.	3.7	26.5	53.0	16.8	40.5	5.0	41 29.5
20	41	Lal. 14865	E.	S.	6 56 ..	1.0	49.0	37.4	26.0	20.0	9.0	N.	49.5	46.0	55.0	1.5	11.5	27.2	69 ..
	42		W.	N.	7 50 ..	4.5	18.7	30.0	35.0	44.0	41.5	S.	22.5	11.0	6.5	54.0	42.0	29.8	63 ..

DATE.	CLOCK + AZIMUTH.	CLOCK'S HOURLY RATE.
	h. s.	s.
Feb. 23, 7	— 2.51	+ 0.062
Mar. 5, 5	+ 6.54	.062

LEVEL READINGS.			Corr. for Level.	MEAN OF WIRES	Correction in Right Ascension.	OBSERVED		REDUCTION TO 1850.0		Magnitude.	Observer.	OBJECT.
Means.		S. — N.				R. Ascension.	N. Declination.	R. A.	Decl.			
N.	S	*Div.*	″	H. M. S.	S.	H. M. S.	° ′ ″	S.	″			
18.10	19.90	+1.80	+0.57	7 11 53.33	— 2.21	7 11 51.12	37 2 26.76	+ 9.91	—10.97	7	H.	(2416)
20.45	20.17	—0.28										
18.50	19.77	+1.27	1.11	6 48 41.67	2.62	6 48 39.05	38 15 17.27	10.17	6.85	9		(2270)
19.05	20.75	1.70										
18.52	19.95	1.43	0.57	7 42 14.56	2.31	7 42 12.25	36 39 10.67	9.66	16.82	9.10		Lal. 15235.
20.45	20.55	0.10										
18.50	20.35	+1.85	0.67	7 41 10.71	2.19	7 41 8.52	37 27 43.44	9.73	16.81	8.9		Lal. 15196.
20.47	20.42	—0.05										
18.50	20.47	1.97	1.47	7 19 53.69	— 2.49	7 19 51.20	38 28 46.01	9.98	—12.94	10		Lal. 14484.
19.05	21.00	1.95										
16.60	17.15	—0.55	0.39	1 58 27.86	+ 6.42	1 58 34.28	22 44 14.44	9.80	+52.58	..		α Arietis.
13.02	13.52	+0.50										
15.07	14.85	—0.22	1.06	4 27 3.52	6.47	4 27 9.99	16 11 45.86	9.31	+30.71	..		α Tauri.
13.85	16.90	+3.05										
12.20	13.25	1.05	1.43	6 42 37.35	6.51	6 42 43.86	34 8 19.34	10.03	— 4.89	6		ϑ Geminorum.
13.82	16.60	2.78										
12.40	13.20	0.80	1.84	7 19 11.10	6.48	7 19 17.58	32 4 54.35	9.65	—11.47	6.7		ρ Geminorum.
14.07	18.17	4.10										
12.20	13.40	1.20	0.67	5 54 27.97	6.72	5 54 34.69	37 57 49.08	10.65	+ 4.44	8		(1935)
13.60	14.20	0.60										
12.65	13.15	0.50	1.01	6 54 28.79	6.49	6 54 35.28	35 45 1.48	10.09	— 7.95	10		Lal. 13601.
14.00	16.20	2.20										
12.95	13.15	0.20	0.56	6 15 8.35	6.40	6 15 14.75	38 7 28.61	10.55	0.18	9		Lal. 12173.
13.45	14.75	1.30										
12.95	13.60	0.65	1.23	7 11 43.83	6.40	7 11 50.23	37 2 28.20	10.08	11.97	6.7		(2416)
14.00	16.65	2.65										
13.17	13.62	0.45	1.38	7 42 5.15	6.37	7 42 11.52	36 39 12.69	9.77	17.97	10		Lal. 15235.
13.90	17.15	3.25										
13.20	13.77	0.57	1.85	8 15 11.92	6.37	8 15 18.29	35 29 58.14	9.42	23.87	9		Lal. 16413.
14.15	18.50	4.35										
13.45	14.15	0.70	1.01	7 19 44.34	+ 6.30	7 19 50.64	38 28 46.60	+10.15	—14.04	9.10		Lal. 14484.
13.62	15.62	2.00										
11.40	12.92	1.52	0.61	5 54 26.06	. .	. . .	37 57 48.63	. .	+4.43	8		(1935)
13.15	13.25	0.10										
11.70	13.05	1.35	0.71	6 15 6.44	. .	. . .	38 7 28.17	. .	— 0.20	8.9		Lal. 12173.
13.06	13.60	0.54										
9.85	11.72	1.87	1.21	6 23 56.05	. .	. . .	38 38 57.94	. .	4.88	11		Lal. 12503.
10.40	11.77	1.37										
14.60	15.52	0.92	1.34	8 35 40.42	. .	. . .	37 50 30.57	. .	29.55	10		Lal. 17182.
13.22	15.85	2.63										
11.05	12.30	1.25	+1.27	7 29 45.52	. .	. . .	38 41 14.99	. .	—17.31	7		Lal. 14865.
10.85	13.00	+2.15										

ASSUMED LATITUDE 38° 53′ 38″.80 NORTH.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. S.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
Mar. 20	1	Lal. 17182	E.	N.	7 30 ..	10.0	34.0	59.0	24.6	48.0	13.1	S.	55.4	21.5	45.8	12.8	38.7	6.0	36 ..
	2		W.	S.	9 35 ..	11.0	37.8	4.3	31.0	55.5	22.0	N.	4.2	28.8	52.4	17.9	42.3	6.7	41 ..
22	3	Lal. 14865	E.	N.	6 55 ..	53.0	40.3	29.5	20.7	9.5	3.5	S.	53.3	57.1	58.5	8.0	21.8	37.2	70 ..
	4		W.	S.	7 48 ..	52.5	8.0	21.3	30.0	33.3	37.1	N.	27.0	19.3	7.9	58.9	48.0	36.8	63 ..
	5	Lal. 17605	E.	S.	8 29 7.0	49.0	38.0	25.5	17.0	10.0	..	N.	..	3.0	8.5	18.0	46.0	27.0	42 44.0
	6		W.	N.	8 52 50.0	6.0	42.0	10.0	21.5	28.0	..	S.	..	24.0	18.0	9.0	58.5	44.0	66 29.5
24	7	(3162)	E.	N.	7 52 54.2	15.8	37.0	58.1	20.1	39.8	1.5	S.	28.0	50.0	11.3	33.9	56.0	18.6	58 41.2
	8		W.	S.	10 19 28.7	51.6	13.1	36.8	59.1	20.5	42.0	N.	8.5	29.9	50.0	12.2	33.5	54.5	25 15.0
	9	(3261)	E.	S.	8 0 ..	..	..	56.8	15.1	35.0	52.9	N.	7.0	25.2	45.6	5.0	..	..	4 ..
	10		W.	N.	10 45 ..	..	..	8.7	27.6	48.3	6.0	S.	20.4	38.1	58.0	16.5	..	..	48 ..
	11	(3446)	E.	N.	8 12 50.1	5.1	20.5	35.9	51.0	5.8	21.5	S.	22.0	38.0	52.1	8.5	24.1	40.0	16 55.7
	12		W.	S.	11 39 25.0	40.5	56.1	11.9	27.2	42.0	57.7	N.	58.8	14.5	29.0	44.5	0.0	15.0	43 30.0
	†13	Lal. 18362	E.	S.	8 50 27.0	6.0	47.2	29.5	15.0	2.0	51.5	N.	31.0	28.0	29.2	37.5	51.0	17.0	63 57.0
	14		W.	N.	9 18 16.0	55.0	23.0	39.5	45.0	50.0	46.0	S.	30.0	18.0	2.8	47.5	30.0	12.5	31 54.0
	15	Lal. 20783	E.	S.	9 51 ..	..	57.0	30.0	3.0	38.8	11.4	N.	30.5	5.5	45.5	22.8	1.3	..	59 ..
	16		W.	N.	11 19 ..	..	55.3	34.4	11.1	50.9	24.0	S.	44.8	17.1	52.9	26.0	59.5	..	26 ..
31	17	α Lyncis	E.	S.	7 11 ..	18.0	31.0	43.8	57.1	11.0	23.0	N.	15.0	26.9	41.0	54.0	7.8	21.0	14 ..
	18		W.	N.	11 8 ..	29.8	43.5	56.5	9.5	23.8	35.9	S.	27.8	40.0	54.0	6.9	20.0	32.8	11 ..
	19	Lal. 18288	E.	N.	7 23 37.0	52.4	7.2	22.9	38.0	53.0	8.0	S.	9.6	25.1	40.0	55.5	11.1	26.9	27 42.9
	20		W.	S.	10 49 40.0	56.0	11.0	27.0	43.0	57.4	13.0	N.	14.0	30.0	44.5	0.0	14.6	30.0	53 45.5
	21	(2855)	E.	S.	7 40 40.5	20.0	59.0	37.0	16.8	59.1	36.5	N.	24.9	7.8	55.0	42.0	31.0	19.5	52 11.0
	22		W.	N.	8 53 7.5	58.2	47.0	36.0	23.0	11.2	51.5	S.	42.8	20.0	3.0	41.8	21.0	58.8	64 37.0
	23	(3162)	E.	N.	7 52 51.5	12.0	32.6	53.8	15.8	35.8	57.8	S.	24.0	46.0	7.5	29.7	51.8	14.0	58 37.0
	24		W.	S.	10 19 24.2	46.4	9.3	32.2	54.0	15.1	37.0	N.	3.5	25.1	45.5	7.8	27.9	49.5	25 10.0
	25	(3261)	E.	S.	7 59 56.2	14.1	33.0	52.0	10.5	30.7	48.5	N.	4.0	21.4	41.8	1.0	21.0	40.0	65 0.0
	26		W.	N.	10 44 4.8	24.2	44.0	3.0	22.8	42.8	0.8	S.	16.1	33.5	53.5	11.5	30.5	50.1	49 8.5
	27	(3446)	E.	S.	8 12 48.0	3.0	18.0	33.0	47.6	4.0	17.6	N.	17.5	32.0	48.0	3.0	18.2	33.9	16 49.1
	28		W.	N.	11 39 22.1	37.9	53.0	8.9	24.0	40.0	54.0	S.	53.6	7.5	23.8	38.5	53.8	8.0	43 23.5
	29	Lal. 20783	E.	N.	9 50 44.0	16.9	49.6	24.2	59.2	32.0	7.0	S.	31.0	9.6	44.2	22.9	3.4	42.3	61 23.0
	30		W.	S.	11 18 25.0	6.4	46.0	24.2	3.8	40.5	17.1	N.	42.0	16.8	50.4	24.0	57.9	31.9	28 4.8
April 3	31	Lal. 18288	E.	N.	7 23 40.0	55.0	10.5	25.9	41.0	55.6	11.0	S.	13.0	28.0	42.9	58.9	14.5	30.0	27 46.0
	32		W.	S.	10 49 41.0	57.3	13.0	28.4	44.5	59.1	15.0	N.	17.0	32.6	47.0	2.3	17.8	33.0	53 48.1
	33	(2855)	E.	N.	7 40 38.0	16.5	55.0	34.6	16.0	54.4	35.8	S	31.2	18.0	1.5	50.8	39.9	30.8	52 22.5
	34		W.	S.	8 53 1.0	53.0	44.8	33.0	21.7	6.0	52.0	N.	47.0	29.9	8.5	49.0	28.5	7.5	64 45.0
	35	(3162)	E.	S.	7 52 57.0	17.5	39.0	59.9	20.1	42.5	2.2	N.	25.0	45.0	8.5	29.9	51.9	14.0	58 36.1
	36		W.	N.	10 19 29.7	52.4	14.5	36.1	57.9	20.9	41.0	S.	4.5	23.6	46.0	7.0	28.0	48.5	25 9.5
	37	(3364)	E.	N.	9 8 17.5	41.0	6.0	29.5	55.0	20.0	44.5	S.	41.0	7.0	33.3	1.0	27.5	56.0	14 24.0
	38		W.	S.	10 11 13.5	41.5	9.5	36.5	4.5	31.0	56.0	N.	51.5	16.5	42.5	7.0	31.5	56.5	17 19.0
13	†39	Lal. 20169	E.	N.	8 50 ..	28.7	47.6	6.2	24.8	42.6	1.5	S.	17.3	36.5	54.3	14.0	34.1	53.0	54 ..
	40		W.	S.	11 38 ..	46.0	5.5	25.0	45.0	2.2	22.0	N.	37.0	55.8	14.0	32.0	50.8	9.9	43 ..
	41	β Leonis Min.	E.	S.	9 4 9.4	30.1	51.5	12.6	33.1	55.6	16.0	N.	41.0	1.0	24.0	46.0	8.5	31.0	9 54.6
	42		W.	N.	11 28 32.8	55.5	17.5	39.7	2.0	25.0	46.0	S.	11.2	30.3	53.0	14.5	35.5	56.5	34 17.7

DATE.	CLOCK +AZIMUTH.	CLOCK'S HOURLY RATE.
	h. s.	s.
Mar. 24,	9 + 15.53	+ 0.037
31,	9 19.91	0.000
April 3,	9 + 17.43	0.000
13,	10 — 10.06	— 0.100

Clock pendulum frequently adjusted.
March 22. Commenced using new level-tube—value of 1 div. = 1″.13. Adjusted for level.
13. Observation unsatisfactory.
39. Star very unsteady.

LEVEL READINGS.			Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED		REDUCTION TO 1850.0		Magnitude.	Observer.	OBJECT.
Means.		S.—N.				R. Ascension.	N. Declination.	R. A.	Decl.			
N.	S.	Div.	"	H. M. S.	S.	H. M. S.	° ′ ″	S.	″			
10.60	12.90	+2.30	+1.07	8 35 38.45	..	. . .	37 50 30.73	. .	—29.70	9.10	H.	Lal. 17182.
12.05	12.60	+0.55										
20.75	20.65	—0.10	—0.27	7 29 44.69	..	. . .	38 41 13.33	. .	17.37	7		Lal. 14865.
21.65	20.79	0.86										
22.02	21.00	1.02	0.74	8 47 46.40	..	. . .	38 50 37.84	. .	32.21	10		Lal. 17605.
22.50	20.85	—1.65										
20.80	20.95	+0.15	0.13	9 9 5.03	+ 15.64	9 9 20.67	37 26 37.75	+ 9.24	35.39	4.5		(3162)
23.02	22.42	—0.60										
20.95	20.95	0.00	—0.03	9 24 36.64	15.56	9 24 52.20	37 4 15.69	9.02	37.53	5		(3261)
23.00	22.90	—0.10										
21.05	21.17	+0.12	+0.04	9 58 10.09	15.58	9 58 25.67	35 59 6.47	8.58	41.41	6		(3446)
23.37	23.40	+0.03										
21.67	21.57	—0.10	—0.06	9 11 8.49	..	. . .	38 49 48.19	. .	36.08	9		Lal. 18362.
22.15	22.05	0.10										
22.60	22.55	—0.05	+0.02	10 39 28.11	15.55	10 39 43.66	38 22 22.45	8.09	45.58	10		Lal. 20783.
23.25	23.35	+0.10										
26.00	26.52	+0.52	0.00	9 11 25.45	20.01	9 11 45.46	35 2 1.45	9.13	36.09	4		α Lyncis.
29.22	28.67	—0.55										
25.62	26.52	+0.90	+0.09	9 8 41.26	20.06	9 9 1.32	36 0 1.96	9.27	35.95	7		Lal. 18288.
29.20	28.65	—0.55										
26.92	26.75	0.17	—0.12	8 22 39.32	19.94	8 22 59.26	38 32 5.11	10.02	28.80	7		(2855)
28.37	28.10	0.27										
27.95	27.10	0.85	0.25	9 9 0.59	19.79	9 9 20.38	37 26 39.03	9.36	36.44	5		(3162)
28.70	28.65	0.05										
27.95	27.10	0.85	0.35	9 24 32.15	19.85	9 24 52.00	37 4 16.64	9.13	38.63	..		(3261)
29.00	28.60	0.40										
28.02	27.40	—0.62	0.15	9 58 5.77	19.84	9 58 25.61	35 59 7.75	8.66	42.59	6		(3446)
28.95	29.05	+0.10										
28.82	28.40	—0.42	0.02	10 39 24.29	19.71	10 39 44.00	38 22 24.31	8.14	46.94	10		Lal. 20783.
28.75	29.10	+0.35										
19.40	19.85	+0.45	0.10	9 8 43.87	17.56	9 9 1.43	36 0 2.78	9.33	36.26	..		Lal. 18288.
22.40	21.60	—0.80										
20.00	19.75	0.25	0.10	8 22 41.85	17.38	8 22 59.23	38 32 5.11	10.09	29.02	7		(2855)
21.00	20.90	0.10										
20.35	20.22	0.13	0.18	9 9 3.15	17.49	9 9 20.64	37 26 39.63	9.42	36.76	5		(3162)
22.07	21.55	0.52										
21.10	21.00	0.10	0.06	9 42 48.58	+ 17.43	9 43 6.01	38 37 38.23	9.02	41.89	9.10		(3364)
21.70	21.60	—0.10										
25.80	25.90	+0.10	0.07	10 16 49.41	— 10.03	10 16 39.38	36 58 38.63	8.59	46.68	9		Lal. 20169.
27.45	27.10	—0.35										
26.10	25.85	0.25	—0.12	10 19 13.25	— 10.10	10 19 3.15	37 29 13.70	+ 8.59	—47.37	4		β Leonis Min.
27.30	27.10	—0.20										

ASSUMED LATITUDE 38° 53′ 38″.80 NORTH.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. s.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
April 13	1	Anon.	E.	N.	9 47 18.0	40.7	3.0	25.5	44.8	9.8	33.0	S.	5.0	29.0	50.0	15.0	38.5	2.2	53 27.0
	2		W.	S.	12 5 16.0	40.2	4.0	27.8	52.0	14.0	37.5	N.	9.9	33.2	54.2	17.0	40.0	2.0	11 24.1
14	3	β Leonis Min.	E.	N.	9 4 9.0	30.5	52.0	13.5	35.2	55.8	17.7	S.	46.0	8.9	30.0	52.5	15.5	38.1	10 1.2
	4		W.	S.	11 28 32.5	55.6	18.6	41.0	4.1	25.0	47.9	N.	16.0	38.0	58.6	20.4	42.0	3.0	34 25.0
	5	Lal. 21081	E.	S.	9 23 17.0	35.0	53.0	11.0	28.8	48.0	4.8	N.	16.5	33.5	53.0	11.3	30.0	49.0	28 8.0
	6		W.	N.	12 14 23.5	42.4	1.0	20.0	38.1	57.9	15.0	S.	26.2	43.3	2.9	20.0	38.0	56.6	19 14.0
	7	Lal. 21418	E.	N.	9 31 11.0	28.0	45.2	3.0	20.2	36.0	54.0	S.	4.0	21.5	38.2	56.2	14.0	32.0	35 50.0
	8		W.	S.	12 33 6.5	24.0	42.5	0.0	18.0	35.0	52.0	N.	2.5	20.0	36.0	53.5	11.0	28.0	37 45.3
	9	Lal. 21421	E.	N.	9 31 33.0	50.0	7.2	24.7	42.0	58.0	15.8	S.	25.5	43.0	0.2	18.2	36.0	54.0	36 12.0
	10		W.	S.	12 33 3.0	21.0	39.5	57.0	15.0	32.0	49.3	N.	0.0	17.0	34.0	51.5	8.5	25.8	37 43.0
	11	Anon.	E	S.	9 47 25.2	48.0	10.0	32.0	54.0	17.5	38.0	N.	7.0	28.0	53.0	15.7	39.0	3.0	53 26.6
	12		W.	N.	12 5 23.5	47.2	11.0	34.7	57.5	22.2	43.6	S.	12.0	33.0	56.5	18.1	40.1	2.8	11 24.8
	13	Lal. 21902	E.	N.	10 0 3.0	22.0	41.0	0.0	19.9	38.0	57.0	S.	15.0	35.0	53.9	13.5	33.9	53.9	5 14.0
	14		W.	S.	12 43 21.0	41.5	2.0	21.1	41.6	0.0	20.3	N.	38.0	57.5	15.8	35.0	54.2	13.5	48 33.0
	15	Lal. 22485	E.	S.	10 9 ..	5.6	21.2	37.2	52.8	9.6	24.1	N.	27.2	42.0	59.1	15.4	31.7	47.9	12 ..
	16		W.	N.	13 24 ..	31.8	48.0	4.0	20.0	37.0	52.0	S.	55.0	10.0	26.0	42.0	58.0	14.0	28 ..
	17	Lal. 22612	E.	N.	10 25 43.5	1.5	20.0	38.1	56.8	13.5	32.0	S.	46.5	5.3	23.0	42.0	1.0	20.0	30 39.0
	18		W.	S.	13 17 31.5	51.0	10.0	29.0	48.0	5.5	24.0	N.	38.4	57.0	14.0	32.8	51.0	8.9	22 27.3
	19	Lal. 22450	E.	S.	10 35 30.5	53.0	15.0	37.0	59.0	22.8	43.0	N.	11.7	33.0	57.8	20.6	44.0	8.0	41 32.0
	20		W.	N.	12 53 39.0	3.0	26.2	50.0	12.5	37.0	58.6	S.	27.0	47.9	11.6	33.1	55.3	17.1	59 40.0
	21	Lal. 23896	E.	N.	11 19 5.0	24.0	43.5	3.0	23.0	41.0	1.0	S.	21.2	41.5	0.5	21.0	41.8	2.0	24 23.0
	22		W.	S.	13 58 29.0	50.5	11.0	31.0	52.0	11.0	31.5	N.	52.0	11.5	30.0	50.0	10.0	29.2	63 49.0
16	23	(3741)	E.	N.	8 36 57.7	10.0	22.0	34.5	47.0	58.0	11.0	S.	59.4	12.0	23.6	36.5	49.0	1.3	40 14.0
	24		W.	S.	12 54 30.8	43.3	55.7	8.0	21.0	32.5	45.0	N.	34.0	46.0	58.0	10.0	22.0	34.5	57 46.8
	25	(3736)	E.	S.	8 43 31.3	44.1	57.0	10.0	22.4	36.0	48.0	N.	39.0	50.9	4.5	17.1	30.0	43.2	46 56.5
	26		W.	N.	12 46 12.0	25.0	38.2	51.0	3.8	18.0	29.6	S.	20.0	32.0	45.8	58.2	11.0	24.0	49 37.0
	27	Lal. 20169	E.	N.	8 50 ..	24.5	43.1	1.5	20.5	38.0	..	S.	..	31.8	49.8	9.0	28.0	48.0	54 ..
	28		W.	S.	11 38 ..	40.6	0.3	19.1	39.0	56.8	..	N.	..	50.0	8.0	26.9	45.5	4.0	43 ..
	29	Lal. 21418	E.	S.	9 31 5.0	22.0	39.2	56.0	13.0	31.0	47.0	N.	54.0	10.0	28.5	46.0	3.0	20.8	35 39.0
	30		W.	N.	12 32 59.2	17.0	35.0	52.2	9.5	27.8	44.0	S.	51.5	7.0	25.0	42.3	59.3	16.0	37 33.0
	31	Lal. 21421	E.	S.	9 31 26.5	44.0	0.2	17.5	34.5	52.0	8.0	N.	16.0	32.0	50.7	8.0	25.0	43.0	36 1.0
	32		W.	N.	12 32 56.0	14.5	32.0	49.5	7.0	25.0	41.5	S.	49.0	4.7	23.0	40.0	57.0	14.0	37 31.0
18	33	Anon	E.	N.	8 26 29.8	43.0	56.5	9.0	21.9	34.0	..	S.	..	52.8	5.0	18.0	31.1	44.7	29 58.2
	34		W.	S.	12 28 33.5	46.5	0.3	13.6	27.0	39.5	..	N.	..	58.0	10.5	24.0	36.6	49.0	32 2.5
	35	(3741)	E.	S.	8 36 57.2	9.1	20.8	33.1	45.2	57.5	..	N.	..	8.5	22.0	33.3	46.0	58.0	40 10.5
	36		W.	N.	12 54 30.8	43.4	55.0	7.0	19.2	32.8	..	S.	..	43.0	55.5	7.0	19.1	31.6	57 43.1
	37	(3736)	E.	N.	8 43 28.5	41.0	54.0	6.9	20.0	32.5	..	S	..	50.9	3.0	16.2	30.0	42.4	46 56.1
	38		W.	S.	12 46 8.2	21.3	34.5	47.9	1.1	13.6	..	N.	..	32.6	45.0	57.0	10.9	24.0	49 36.5
	39	(3364)	E.	S.	9 8 43.5	6.5	31.0	54.5	20.0	45.0	9.0	N.	4.0	29.0	53.5	21.0	48.0	16.5	14 45.0
	40		W.	N.	10 11 35.0	2.0	30.0	57.0	25.0	51.5	14.0	S.	8.0	32.0	57.0	22.0	46.0	11.5	17 35.5
	41	(3641)	E.	S.	10 0 26.5	53.5	24.0	48.5	19.5	48.0	19.0	N.	15.0	46.0	19.0	51.5	24.0	1.0	7 35.0
	42		W.	N.	10 53 20.5	57.0	31.0	3.0	33.5	7.0	37.0	S.	37.0	7.0	35.0	4.5	31.0	58.0	60 27.0

DATE.	CLOCK + AZIMUTH.	CLOCK'S HOURLY RATE.
h.	s.	s.
April 13, 10	— 10.06	—0.100
14, 10	13.53	— .140
16, 11	4.99	+ .030
18, 10	3.09	.040

April 15. Clock pendulum again adjusted.

LEVEL READINGS. Means. N.	Means. S.	S.—N.	Corr. for Level.	MEAN OF WIRES	Correction in Right Ascension.	OBSERVED R. Ascension.	OBSERVED N. Declination.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 Decl.	Magnitude.	Observer.	OBJECT.
N.	S.	Div.	″	H. M. S.	S.	H. M. S.	° ′ ″	S.	″			
26.55	26.55	0.00	−0.20	10 59 21.34	— 10.04	10 59 11.30	37 36 37.74	+ 7.97	−50.23	10	H.	Anon.
27.89	27.17	−0.72										
25.11	26.67	+1.56	+0.46	10 19 16.91	13.40	10 19 3.51	37 29 14.41	8.60	47.55			β Leonis Min.
27.60	27.70	0.10										
26.05	26.25	+0.25	−0.11	10 51 15.64	13.56	10 51 2.08	36 54 40.95	8.10	49.75			Lal. 21081.
28.40	27.75	−0.65										
26.07	26.37	+0.30	+0.12	11 4 28.13	13.67	11 4 14.46	36 38 55.59	7.89	50.48			Lal. 21418.
28.22	28.34	0.12										
26.07	26.37	0.30	0.12	11 4 37.72	13.67	11 4 24.05	36 39 32.52	7.88	50.49			Lal. 21421.
28.22	28.34	0.12										
26.37	26.40	0.03	+0.10	10 59 25.14	13.71	10 59 11.43	37 36 38.05	7.99	50.44	10		Anon.
27.80	28.15	+0.35										
26.70	26.40	−0.30	−0.04	11 24 17.68	13.78	11 24 3.90	37 5 24.33	7.59	51.42			Lal. 21902.
28.20	28.35	+0.15										
26.95	26.40	−0.55	−0.10	11 48 39.65	13.84	11 48 25.81	36 17 48.59	7.23	51.69	8		Lal. 22485.
28.45	28.62	+0.17										
26.75	27.00	0.25	+0.08	11 54 5.38	13.78	11 53 51.60	36 53 41.87	7.15	51.83	7.8		Lal. 22612.
28.45	28.59	0.05										
26.92	27.05	0.13	0.13	11 47 35.15	13.81	11 47 21.34	37 36 26.77	7.25	52.09	8.9		Lal. 22450.
28.20	28.55	0.35										
27.05	27.60	0.55	+0.20	12 41 26.40	13.87	12 41 12.53	37 10 33.02	6.48	50.59	10		Lal. 23896.
28.60	28.75	+0.15										
29.65	28.85	−0.80	−0.31	10 47 22.27	5.02	10 47 17.25	34 19 13.01	8.10	49.38	6		(3741)
31.45	31.15	0.30										
29.70	29.10	0.60	0.24	10 46 34.13	5.01	10 46 29.12	34 50 52.69	8.13	49.56	6.7		(3736)
31.42	31.15	0.27										
29.80	29.05	0.75	0.38	10 16 44.22	5.02	10 16 39.20	36 58 39.05	8.65	47.12	8.9		Lal. 20169.
31.30	30.70	0.60										
30.15	29.75	0.40	0.37	11 4 19.05	4.94	11 4 14.11	36 38 56.06	7.92	50.82			Lal. 21418.
31.65	30.70	0.95										
30.15	29.75	0.40	−0.37	11 4 28.67	4.94	11 4 23.73	36 39 32.46	7.92	50.83			Lal. 21421.
31.65	30.70	−0.95										
29.70	30.10	+0.40	+0.04	10 29 16.04	3.03	10 29 13.01	34 9 11.03	8.38	47.75	8		Anon.
34.10	33.85	−0.25										
30.20	30.25	+0.05	+0.04	10 47 20.36	3.07	10 47 17.29	34 19 12.74	8.12	49.62	6		(3741)
34.45	34.55	+0.10										
30.62	30.45	−0.17	−0.08	10 46 32.25	3.07	10 46 29.18	34 50 52.89	8.15	49.78	6		(3736)
34.50	34.40	0.10										
31.70	30.97	0.73	0.25	9 43 9.08	— 3.25	9 43 5.83	38 37 40.68	+ 9.28	43.74	8		(3364)
32.70	32.52	0.18										
32.65	32.10	−0.55	−0.01	10 30 27.11	.. ..	.. ..	38 42 14.82	.. ..	−49.18	8		(3641)
33.00	33.50	+0.50										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WI G.	F.	E.	D.	C.	B.	A
					H. M. S.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M.
April 21	1	(3625)	E.	N.	9 3 59.0	..	38.0	57.0	16.5	35.0	54.5	S.	14.1	34.0	53.0	13.0	33.5	..	9
	2		W.	S.	11 46 5.0	..	45.0	5.8	25.9	44.8	4.8	N.	24.2	44.0	2.0	21.5	41.0	..	51
	+3	(3811)	E.	S.	9 38 ..	8.4	26.9	46.0	5.0	25.5	43.2	N.	58.2	16.6	37.5	57.0	17.0	37.0	42
	+4		W.	N.	12 19 ..	21.8	41.5	1.2	21.0	42.0	0.0	S.	15.0	32.0	53.0	12.0	31.0	50.0	23
	5	(4010)	E.	N.	11 22 1.5	38.0	17.0	55.0	36.0	18.0	2.0	S.	50.0	39.0	33.5	32.0	33.0	40.0	33
	6		W.	S.	11 54 34.0	47.0	55.0	54.0	53.5	48.0	37.0	N.	24.0	7.0	50.5	31.5	11.0	49.0	66
22	7	(3625)	E.	S.	9 4 0.0	18.9	37.5	56.6	15.2	35.5	53.0	N.	7.3	25.5	46.1	6.0	25.5	45.3	9
	8		W.	N.	11 46 4.6	24.5	44.6	4.5	24.0	44.5	2.5	S.	17.0	34.9	55.0	14.0	32.8	51.9	51
	9	Lal. 22059	E.	N.	9 22 7.0	19.8	32.0	44.5	57.0	8.9	21.5	S.	12.0	24.5	36.5	49.0	2.0	15.0	25
	10		W.	S.	13 25 29.2	42.0	54.9	7.8	20.5	32.5	45.0	N.	35.5	48.0	0.0	12.5	25.0	37.1	38
	11	(3965)	E.	S.	9 33 7.5	20.5	33.5	47.0	59.8	13.9	26.0	N.	17.0	29.2	43.5	56.5	10.0	23.4	36
	12		W.	N.	13 29 23.0	37.0	50.5	4.0	17.0	31.0	43.4	S.	35.0	47.0	1.0	14.0	27.0	40.0	32
	13	(3811)	E.	N.	9 37 41.0	0.3	19.5	38.8	58.5	17.2	37.0	S.	56.5	16.9	36.0	56.0	16.0	36.4	42
	14		W.	S.	12 18 52.0	13.0	33.0	53.0	13.0	32.7	52.2	N.	12.5	32.4	50.7	10.1	30.0	49.0	24
	15	(4128)	E.	N.	9 53 5.0	16.6	28.4	40.0	52.3	3.5	15.2	S.	2.8	14.5	25.9	38.0	50.0	2.0	56
	16		W.	S.	14 21 25.0	37.0	49.1	1.1	13.0	24.8	36.2	N.	24.0	36.0	47.0	59.0	10.9	22.5	24
	17	Lal. 22485	E.	S.	10 8 36.8	53.0	8.4	24.2	40.0	57.0	11.5	N.	13.8	28.6	45.5	1.8	18.0	34.2	12
	18		W.	N.	13 23 58.8	15.0	31.8	48.0	4.0	21.0	36.0	S.	38.0	52.7	9.3	25.0	41.0	56.3	28
	19	Lal. 21947	E.	N.	10 15 4.0	26.3	49.0	12.0	35.6	57.3	20.9	S.	56.0	20.0	42.8	7.6	31.5	56.1	21
	20		W.	S.	12 30 16.1	41.0	6.0	30.3	54.5	17.0	41.2	N.	16.5	40.4	2.9	25.1	48.5	11.0	36
	21	Lal. 22612	E.	S.	10 25 33.5	51.6	9.5	27.0	45.0	4.0	21.0	N.	31.2	48.2	8.0	26.3	44.8	3.8	30
	22		W.	N.	13 17 18.0	37.0	55.6	14.0	32.5	52.0	9.0	S.	20.0	36.1	55.4	13.1	31.9	48.8	22
	23	Lal. 22357	E.	N.	10 33 1.0	24.0	47.0	10.0	..	55.5	19.2	S.	55.5	20.2	..	8.0	32.5	57.6	39
	24		W.	S.	12 46 56.2	21.4	46.0	10.5	..	58.5	22.9	N.	59.0	23.0	..	8.0	31.0	54.2	53
	25	Lal. 23653	E.	S.	11 1 27.8	45.9	3.0	20.8	37.9	56.2	12.5	N.	21.4	38.0	57.0	15.0	33.0	51.2	6
	26		W.	N.	13 57 32.9	50.9	9.1	27.2	45.5	4.5	21.0	S.	29.0	45.0	4.4	21.5	39.0	56.3	62
	27	(4010)	E.	N.	11 21 57.7	34.5	13.0	52.5	34.0	16.0	59.5	S.	45.0	36.5	30.0	29.0	29.9	35.5	33
	28		W.	S.	11 54 27.5	40.5	49.0	49.0	48.0	42.0	32.5	N.	18.5	2.0	44.5	26.0	5.0	43.3	66
25	29	Lal. 22059	E.	N.	9 22 ..	..	28.0	40.0	53.0	4.9	17.2	S.	7.1	20.0	32.0	44.5	57.3	..	24
	30		W.	S.	13 35 ..	..	52.0	4.5	17.0	29.8	42.1	N.	31.8	44.9	56.5	9.0	21.7	..	38
	31	(3965)	E.	S.	9 33 2.5	15.5	28.9	42.0	54.9	9.0	21.0	N.	13.0	25.0	39.0	52.5	6.0	19.5	36
	32		W.	N.	13 29 20.2	34.0	46.9	0.5	13.5	27.8	40.0	S.	32.0	41.0	58.0	11.0	24.0	37.3	32
	33	Lal. 22548	E.	N.	9 36 ..	8.5	20.5	32.1	44.4	56.0	..	S.	..	7.2	18.2	30.8	42.5	55.0	39
	34		W.	S.	14 2 ..	49.6	2.0	14.0	26.0	37.2	..	N.	..	49.0	0.5	12.5	24.0	36.1	5
	35	Lal. 22934	E.	N.	9 47 ..	14.0	25.0	36.5	48.5	59.0	10.5	S.	56.5	8.0	19.0	30.5	42.0	54.0	49
	36		W.	S.	14 22 ..	49.0	0.5	12.0	24.0	35.0	46.5	N.	32.5	44.0	55.0	6.0	18.0	29.0	25
	37	Lal. 22934 *a*	E.	N.	9 47 5.0	16.0	28.0	39.0	51.0	1.0	13.0	S.	59.0	10.5	21.0	33.0	44.5	56.5	50
	38		W.	S.	14 22 39.5	51.0	2.5	14.0	26.0	37.0	48.5	N.	34.5	46.0	57.0	8.0	20.0	31.0	25
	39	Lal. 22485	E.	N.	10 9 ..	..	1.5	18.0	33.8	49.0	5.6	S.	10.8	27.0	42.0	59.0	15.6	..	12
	40		W.	S.	13 24 ..	..	26.0	42.9	59.0	15.0	31.2	N.	36.2	52.8	8.0	24.0	40.5	..	27
	41	Lal. 21947	E.	S.	10 15 ..	..	48.2	10.5	32.5	57.0	18.5	N.	48.7	10.4	35.5	58.8	22.8	..	20
	42		W.	N.	12 31 ..	..	6.8	30.6	53.8	19.0	40.7	S.	11.7	32.7	57.2	19.8	41.9	..	35

DATE.	CLOCK +AZIMUTH.	CLOCK'S HOURLY RATE.
	h. s.	s.
April 21,	11 — 3.72	+ 0.080
22,	11 + 0.65	0.078
25,	13 4.53	0.000

4. Hazy. Star scarcely visible.

LEVEL READINGS. Means. N.	Means. S.	S. — N. Div.	Corr. for Level. ″	MEAN OF WIRES. H. M. S.	Correction in Right Ascension. s.	OBSERVED R. Ascension. H. M. S.	OBSERVED N. Declination. ° ′ ″	REDUCTION TO 1850.0 R. A. s.	REDUCTION TO 1850.0 Decl. ″	Magnitude.	Observer.	OBJECT.
20.90	19.62	—1.28	—0.92	10 27 39.37	— 3.68	10 27 35.69	37 6 59.79	+ 8.57	—48.80	6	H.	(3625)
22.65	20.65	2.00										
21.05	20.00	1.05	0.77	11 0 59.12	— 3.65	11 0 55.47	37 8 11.16	8.04	51.43	7		(3811)
22.75	21.05	1.70										
22.25	20.60	1.65	0.99	11 44 13.48	. .	. . .	38 48 49.88	. .	68.87	7		(4010)
22.65	20.75	1.90										
20.95	19.05	1.90	1.33	10 27 35.13	+ 0.71	10 27 35.84	37 7 0.11	8.58	48.93	6		(3625)
23.40	20.55	2.85										
21.30	19.15	2.15	1.55	11 30 28.46	0.77	11 30 29.23	34 28 16.66	7.55	52.25	..		Lal. 22059.
24.60	21.20	3.40										
21.11	19.59	1.52	1.30	11 33 0.26	0.80	11 33 1.06	35 3 49.48	7.52	53.71	5.6		(3965)
24.50	21.40	3.10										
21.10	19.65	1.45	1.21	11 0 54.62	0.81	11 0 55.43	37 8 11.54	8.05	51.58	7.8		(3811)
23.85	20.90	2.95										
21.75	19.60	2.15	1.40	12 8 49.57	0.77	12 8 50.34	33 54 54.21	7.00	53.01	7		(4128)
24.85	22.00	2.85										
21.75	19.72	2.03	1.35	11 48 24.78	0.77	11 48 25.55	36 17 52.05	7.30	53.07	8		Lal. 22485.
24.15	21.35	2.80										
22.05	20.00	2.05	1.36	11 25 48.70	0.77	11 25 49.47	37 39 39.42	7.67	52.91	8		Lal. 21947.
23.82	21.02	2.80										
22.30	19.87	2.43	1.48	11 53 50.21	0.77	11 53 50.98	36 53 45.08	7.21	53.24	7		Lal. 22612.
24.05	21.20	2.85										
22.30	20.00	2.30	1.46	11 43 9.14	0.78	11 43 9.92	37 41 4.34	7.39	53.34	10		Lal. 22357.
24.00	21.10	2.90										
22.65	20.12	2.53	1.63	12 31 51.07	0.84	12 31 51.91	36 47 32.07	6.64	52.54	8		Lal. 23653.
24.87	21.57	3.30										
22.70	20.65	2.05	—1.42	11 44 8.91	. .	. . . .	38 48 50.08	. .	69.01	8		(4010)
23.57	20.55	— 3.02										
31.95	32.25	+ 0.30	+0.17	11 30 24.66	4.53	11 30 29.19	34 28 16.54	7.58	52.80	7		Lal. 22059.
34.75	35.05	0.30										
31.95	32.15	0.20	+0.14	11 32 56.47	4.53	11 33 1.00	35 3 48.99	7.55	54.27	6.7		(3965)
34.75	35.05	+ 0.30										
32.50	31.65	— 0.85	—0.11	11 50 52.30	4.45	11 50 56.75	33 59 52.96	7.28	53.13	8		Lal. 22548.
34.75	35.20	+ 0.45										
32.40	32.10	— 0.30	—0.10	12 6 21.46	4.53	12 6 25.99	33 38 1.97	7.06	53.07	9		Lal. 22934.
35.05	35.00	0.05										
32.40	32.10	0.30	—0.10	12 6 23.71	4.53	12 6 28.24	33 38 0.94	7.06	53.07	9		Lal. 22934 *a*.
35.05	35.00	0.05										
32.60	32.50	— 0.10	+0.15	11 48 20.90	4.47	11 48 25.37	36 17 50.61	7.32	53.66			Lal. 22485.
34.35	35.00	+ 0.65										
32.70	32.75	0.05	+0.06	11 25 44.85	+ 4.53	11 25 49.38	37 39 38.36	+ 7.70	— 53.49	8		Lal. 21947.
34.45	34.60	+ 0.15										

ASSUMED LATITUDE 38° 53′ 38″.80 NORTH.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. S.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
April 25	1	Lal. 22612	E.	N.	10 25 25.7	44.0	2.2	20.3	38.8	56.0	14.8	S.	28.9	47.2	5.2	24.0	43.3	1.5	30 21.2
	2		W.	S.	13 17 11.7	31.0	50.0	8.8	27.5	45.1	4.4	N.	18.5	37.2	54.0	12.6	30.5	49.2	22 7.2
	3	Lal. 22357	E.	S.	10 33 1.0	24.0	46.5	9.2	31.5	56.0	18.0	N.	48.8	10.9	36.0	59.0	23.2	48.4	39 13.3
	4		W.	N.	12 46 58.0	23.0	47.5	11.0	35.0	0.2	22.5	S.	54.0	15.5	39.5	2.5	25.0	47.8	53 10.9
	5	Lal. 22574	E.	N.	10 40 ..	..	10.0	32.0	54.0	15.5	37.8	S.	10.0	33.2	55.0	18.8	42.0	..	44 ..
	6		W.	S.	12 59 ..	..	48.2	12.0	35.2	57.5	21.2	N.	52.0	14.5	36.0	58.0	21.0	..	64 ..
	7	Lal. 22577	E.	N.	10 40 ..	..	23.0	45.0	8.0	28.5	51.8	S.	23.0	46.0	8.5	33.0	56.0	..	44 ..
	8		W.	S.	12 59 ..	..	49.0	12.7	36.0	58.3	22.0	N.	52.8	15.3	36.8	59.0	22.0	..	64 ..
	9	Lal. 23653	E.	S.	11 1 22.8	41.0	58.0	15.6	32.5	51.2	8.0	N.	17.3	33.9	53.0	11.0	29.0	47.0	6 6.0
	10		W.	N.	13 57 29.0	47.5	5.8	24.0	42.0	0.5	17.0	S.	27.2	43.4	1.8	19.5	37.0	54.2	62 12.0
	11	(4384)	E.	N.	11 24 39.0	56.2	13.5	30.0	47.3	4.0	21.0	S.	31.0	48.0	5.0	22.5	40.0	57.8	29 16.0
	12		W.	S.	14 27 49.2	7.0	24.8	42.8	0.5	17.0	34.8	N.	44.0	1.5	17.7	34.6	51.8	9.0	32 26.2
	13	(4552)	E.	S.	12 6 3.5	22.5	41.5	59.5	18.9	38.5	56.0	N.	10.8	28.5	49.0	8.0	27.6	47.2	11 7.2
	14		W.	N.	14 50 7.5	27.3	46.9	6.5	25.5	46.0	4.1	S.	18.1	36.0	56.0	14.3	32.9	52.0	55 11.0
May 4	15	Lal. 23666	E.	N.	10 31 41.0	54.0	7.8	20.8	34.0	47.0	0.0	S.	53.5	6.8	19.5	33.0	47.0	0.0	35 13.8
	16		W.	S.	14 29 42.0	55.4	9.0	22.0	36.2	49.0	2.2	N.	55.7	8.9	21.9	35.0	48.2	1.5	33 15.0
	17	Lal. 22574	E.	S.	10 39 19.0	41.6	3.0	25.0	47.0	9.5	30.0	N.	58.0	19.0	43.0	5.5	29.0	52.2	45 16.0
	18		W.	N.	12 58 51.0	15.5	38.0	2.0	24.2	48.7	9.8	S.	37.2	57.8	20.8	42.0	4.5	26.2	64 47.8
	19	Lal. 27577	E.	S.	10 39 32.0	54.8	16.0	38.2	0.0	23.0	43.5	N.	11.0	32.5	57.0	19.0	42.2	6.0	45 30.0
	20		W.	N.	12 58 52.3	16.7	39.0	3.2	25.5	50.0	11.0	S.	38.5	59.0	22.0	43.3	6.0	27.8	64 49.2
	21	Lal. 23537	E.	N.	11 7 12.0	32.0	52.8	12.4	32.8	51.8	12.2	S.	34.5	54.5	15.0	36.0	56.8	18.1	12 40.0
	22		W.	S.	13 42 16.5	37.5	59.6	20.8	41.6	1.0	21.6	N.	44.9	5.8	24.2	45.0	4.8	24.9	47 45.0
	23	Lal. 23269	E.	S.	11 16 ..	38.1	3.6	29.2	54.7	22.2	46.5	N.	30.5	55.5	24.0	51.0	19.5	48.0	22 ..
	24		W.	N.	13 14 ..	25.2	53.1	21.8	48.1	17.0	41.6	S.	25.0	49.2	16.8	42.8	7.5	33.9	20 ..
	25	Anon.	E.	S.	11 46 37.5	52.2	6.6	20.8	35.6	51.0	4.0	N.	1.5	15.0	30.8	45.0	0.0	15.5	50 30.0
	26		W.	N.	15 20 51.0	5.8	21.0	35.2	50.6	6.3	19.5	S.	16.9	30.0	46.0	0.0	14.0	28.7	24 43.7
	27	Lal. 24579	E.	N.	11 56 34.1	57.8	21.4	44.0	7.8	29.4	53.2	S.	29.8	53.5	17.0	41.5	6.7	31.1	62 57.0
	28		W.	S.	14 9 41.2	6.8	31.9	56.0	21.4	44.5	8.8	N.	44.6	8.0	30.2	53.5	17.2	40.0	16 2.8
	29	(4552)	E.	S.	12 6 ..	..	31.0	50.0	8.2	28.4	45.5	N.	0.2	18.0	39.0	57.2	18.0	..	10 ..
	30		W.	N.	14 50 ..	..	34.2	53.8	13.4	33.0	51.0	S.	5.6	23.4	43.4	2.0	20.5	..	54 ..
	31	(4536)	E.	S.	12 25 33.0	58.0	24.6	49.6	15.6	43.0	7.5	N.	51.4	16.3	46.0	12.2	40.0	9.0	32 37.2
	32		W.	N.	14 22 50.0	17.8	45.5	15.0	42.6	10.9	36.0	S.	21.2	44.9	13.2	37.8	3.0	29.5	29 54.5
5	33	Anon.	E.	S.	10 56 21.5	40.5	57.5	15.5	34.5	53.0	12.0	N.	25.0	47.0	7.0	29.0	48.8	13.0	61 34.0
	34		W.	N.	11 36 54.5	16.5	40.0	0.5	21.5	42.0	3.5	S.	20.5	38.5	58.0	17.0	33.0	53.0	42 12.0
	†35	(4311)	E.	S.	11 53 9.0	42.3	14.6	47.5	20.0	55.4	26.5	N.	41.8	14.5	54.0	29.5	7.2	45.0	62 24.5
	†36		W.	N.	13 22 54.8	33.8	10.4	47.8	25.5	3.4	37.0	S.	52.3	23.2	59.5	31.6	4.1	36.0	32 9.2
6	37	Lal. 23711	E.	N.	10 27 7.5	19.6	32.1	45.0	57.5	9.1	22.0	S.	12.0	25.0	37.0	49.8	3.0	15.2	30 28.0
	38		W.	S.	14 38 49.0	1.5	14.4	26.8	40.0	51.6	4.4	N.	55.5	8.0	20.0	32.8	45.0	57.9	42 10.1
	39	Lal. 23666	E.	S.	10 31 41.0	54.2	7.5	20.7	33.5	47.0	59.5	N.	50.8	3.0	17.0	29.8	43.0	56.4	35 10.0
	40		W.	N.	14 29 41.6	55.8	9.0	22.7	35.8	49.9	2.4	S.	53.0	5.0	19.0	32.0	45.0	57.5	33 11.0
	†41	Anon.	E.	S.	10 46 9.0	..	41.5	52.0	3.3	14.0	26.0	N.	29.0	41.0	52.0	3.0	14.0	..	49 47.3
	†42		W.	N.	15 30 3.2	..	36.7	47.5	58.2	9.5	21.0	S.	24.6	36.5	47.0	58.0	9.2	..	33 41.5

DATE.	CLOCK + AZIMUTH.	CLOCK'S HOURLY RATE.
	h. s.	s.
April 25, 13	+ 4.53	+0.000
May 4, 13	15.73	.031
5, 13	16.47	.031
6, 13	17.22	.031

May 4. Bad night for observing: stars flaring badly.
35. Star very unsteady.
41. Very faint.

	LEVEL READINGS.			Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED		REDUCTION TO 1850.0		Magnitude.	Observer.	OBJECT.
	Means.		S.—N.				R. Ascension.	N. Declination.	R. A.	Decl.			
	N.	S.	*Div.*	″	H. M. S.	S.	H. M. S.	° ′ ″	S.	″			
1	32.67	32.82	+0.15	+0.22	11 53 46.43	+ 4.48	11 53 50.91	36 53 44.04	+7.21	—53.85	..	H.	Lal. 22612.
2	34.40	35.05	+0.65										
3	33.55	32.55	—1.00	—0.22	11 43 5.65	4.38	11 43 10.03	37 41 3.43	7.42	53.93	10		Lal. 22357.
4	34.50	34.72	+0.22										
5	33.50	32.75	—0.75	0.16	11 52 15.15	4.42	11 52 19.57	37 34 46.88	7.27	54.01	9		Lal. 22574.
6	34.55	34.75	+0.20										
7	33.50	32.75	—0.75	0.16	11 52 22.33	4.42	11 52 26.75	37 35 1.41	7.27	54.01	10.11		Lal. 22577.
8	34.55	34.75	+0.20										
9	33.80	33.20	—0.60	0.14	12 31 47.40	4.47	12 31 51.87	36 47 30.85	7.26	53.18	8		Lal. 23653.
0	34.75	34.85	+0.10										
1	33.82	33.57	—0.25	—0.08	12 58 32.54	4.51	12 58 37.05	36 37 1.11	6.27	51.74	7		(4384)
2	35.05	35.00	—0.05										
3	34.07	34.19	+0.12	+0.02	13 30 37.27	4.53	12 30 41.80	37 4 23.44	5.82	51.08	5		(4552)
4	35.35	35.30	—0.05										
5	33.65	32.50	1.15	—0.57	12 32 27.84	15.72	12 32 43.56	35 0 21.21	7.33	54.60	8.9		Lal. 23666.
6	38.37	37.45	0.92										
7	34.20	32.65	1.55	0.63	11 52 3.69	15.60	11 52 19.29	37 34 50.26	7.38	55.65	9.10		Lal. 22574.
8	36.70	36.00	0.70										
9	34.20	32.65	1.55	0.63	11 52 11.02	15.60	11 52 26.62	37 35 4.13	7.38	55.66	10.11		Lal. 22577.
0	36.70	36.00	0.70										
1	35.10	33.55	1.55	0.62	12 27 28.37	15.61	12 27 43.98	37 16 7.40	6.79	55.29	8.9		Lal. 23537.
2	37.45	36.85	0.60										
3	35.15	34.00	1.15	0.56	12 18 36.03	15.67	12 18 51.70	37 57 36.86	6.94	55.67	10		Lal. 23269.
4	37.15	36.30	0.85										
5	35.60	34.50	1.10	0.50	13 35 40.51	15.73	13 35 56.24	35 45 39.26	5.82	50.51	7.8		Anon.
6	38.75	37.90	0.85										
7	35.82	34.85	0.97	0.44	13 6 18.97	15.69	13 6 34.66	37 41 57.76	6.17	53.43	7		Lal. 24579.
8	37.75	37.12	0.63										
9	35.90	35.00	0.90	0.64	13 30 25.79	15.81	13 30 41.60	37 4 25.66	5.84	51.95	5		(4552)
0	38.90	37.45	1.45										
1	36.35	35.05	1.30	—0.60	13 27 43.76	15.68	13 27 59.44	37 58 1.93	5.86	51.42	6		(4536)
2	38.10	37.25	—0.85										
3	34.35	35.25	+0.90	+0.51	11 19 15.31	16.41	11 19 31.72	32 32 54.85	7.85	53.30	10		Anon.
4	34.85	35.95	1.10										
5	35.30	36.10	0.80	0.26	12 42 39.28	16.57	12 42 55.85	38 20 58.50	6.53	55.13	7		(4311)
6	37.40	37.60	0.20										
7	32.30	34.20	1.90	0.60	12 34 38.56	17.30	12 34 55.86	34 31 56.16	6.88	55.02	8		Lal. 23711.
8	37.00	37.27	0.27										
9	32.40	34.30	1.90	0.58	12 32 26.18	17.32	12 32 43.50	35 0 21.92	6.76	54.93	9		Lal. 23666.
0	36.95	37.25	0.30										
1	33.15	33.95	+0.80	+0.22	13 9 55.21	+ 17.27	13 10 12.48	33 17 55.52	+6.25	—52.64	10		Anon.
2	38.10	38.10	0.00										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					h. m. s.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	m. s.
May 6	1	Lal. 23919	E.	N.	10 59 17.2	32.5	48.5	4.0	20.2	35.2	51.0	S.	54.4	10.8	26.0	41.9	58.0	14.0	63 30.3
	2		W.	S.	14 19 50.0	6.0	22.8	38.4	54.9	9.6	26.0	N.	29.0	44.6	0.4	15.1	31.0	47.0	24 2.8
	3	Lal. 23537	E.	S.	11 7 14.0	34.0	53.0	13.0	32.2	54.0	12.2	N.	30.6	49.8	11.8	31.8	52.0	13.5	12 34.4
	4		W.	N.	13 42 20.0	40.0	1.3	22.0	42.3	4.0	23.5	S.	42.0	0.0	21.0	41.2	0.8	20.7	47 40.3
	†5	Lal. 23269	E.	N.	11 16 6.0	32.0	58.7	24.0	50.4	15.5	42.4	S.	31.0	59.0	25.0	53.0	21.5	50.7	23 19.5
	†6		W.	S.	13 13 50.0	19.0	47.4	15.8	44.5	10.8	38.3	N.	26.0	52.8	18.6	45.0	10.8	36.5	21 2.4
	7	Lal. 24615	E.	S.	11 27 15.3	31.0	47.0	2.7	18.0	34.0	48.8	N.	51.0	6.0	23.0	39.0	55.0	11.2	31 27.8
	8		W.	N.	14 44 11.6	27.5	43.9	0.0	15.5	33.0	47.2	S.	49.0	3.0	21.0	36.3	52.0	8.0	48 23.7
	9	Anon.	E.	N.	11 46 34.3	48.8	3.1	18.0	33.0	47.0	1.8	S.	1.0	16.0	30.0	45.0	0.0	15.5	50 30.6
	10		W.	S.	15 20 48.0	2.6	18.0	33.1	48.2	2.5	17.0	N.	16.8	31.0	45.1	0.0	14.8	29.0	24 44.0
	11	Lal. 24579	E.	S.	11 56 37.0	59.0	22.0	45.0	8.2	32.2	53.0	N.	25.5	47.1	12.6	36.5	0.8	25.4	62 50.8
	12		W.	N.	14 9 44.5	9.5	34.5	59.0	22.2	47.0	9.0	S.	41.2	2.7	27.5	50.0	13.0	36.8	15 59.0
	13	(4407)	E.	N.	12 9 ..	15.0	46.0	16.5	47.2	16.9	48.5	S.	58.5	32.1	3.8	37.8	12.3	47.0	16 ..
	14		W.	S.	13 47 ..	51.3	26.0	1.4	35.5	7.4	40.5	N.	50.8	23.0	51.2	23.2	52.7	23.8	55 ..
18	15	(4714)	E.	S.	11 37 18.0	39.0	50.0	..	11.3	22.0	33.3	N.	35.5	47.1	58.0	..	19.5	30.5	40 52.0
	16		W.	N.	16 28 0.8	22.1	33.1	..	54.2	5.2	17.2	S.	19.0	30.3	41.1	..	1.8	13.1	31 34.2
	17	(4632)	E.	N.	11 47 3.7	17.0	31.0	44.5	..	..	..	S.	..	..	..	0.0	14.0	27.5	50 42.0
	18		W.	S.	15 39 6.2	19.5	33.2	47.0	..	..	..	N.	..	..	..	3.0	16.5	30.0	42 44.0
	19	Lal. 25860	E.	S.	11 59 17.0	30.1	43.0	56.5	9.5	24.0	36.6	N.	29.5	41.8	56.0	9.5	22.8	36.8	62 50.8
	20		W.	N.	15 52 44.2	58.0	11.0	24.5	37.8	52.0	5.0	S.	57.0	10.0	23.2	36.5	50.0	3.8	56 17.0
	21	Lal. 26923	E.	S.	12 16 37.0	58.5	10.0	21.0	32.0	43.0	54.5	N.	59.2	10.9	22.2	33.1	45.0	56.5	20 18.0
	22		W.	N.	16 57 4.2	26.2	37.5	49.0	0.1	11.0	23.1	S.	27.0	39.1	49.5	1.0	12.2	24.0	60 45.1
	23	Lal. 25625	E.	S.	12 41 35.0	59.0	22.6	47.5	11.5	37.0	0.0	N.	36.8	0.0	28.0	52.5	18.4	44.0	48 10.7
	24		W.	N.	14 47 33.8	59.4	26.0	51.4	16.9	44.6	7.3	S.	44.5	7.8	33.0	57.1	21.4	45.1	54 9.5
	25	(4797)	E.	N.	12 53 12.3	30.1	48.5	7.1	25.0	42.2	0.8	S.	14.5	33.8	51.0	9.5	28.8	47.8	58 7.7
	26		W.	S.	15 45 27.5	46.5	5.2	25.0	43.7	2.0	20.2	N.	33.5	52.3	10.2	28.8	46.7	4.8	50 23.1
	27	Lal. 28347	E.	N.	14 2 17.2	36.0	55.7	15.5	35.2	53.4	12.9	S.	32.0	52.2	11.0	31.0	52.0	12.0	7 33.5
	28		W.	S.	16 43 17.2	38.0	58.0	18.0	38.3	58.0	18.0	N.	37.0	56.2	15.2	34.0	53.6	14.1	48 32.5
	29	μ^2 Bootis	E.	S.	14 14 3.5	27.5	53.0	17.2	42.5	9.0	31.5	N.	13.5	37.0	5.0	31.3	57.5	24.0	20 52.0
	30		W.	N.	16 16 20.0	46.5	16.0	41.8	7.0	36.0	58.3	S.	38.5	2.2	29.0	53.2	17.5	43.2	23 7.2
	31	μ^1 Bootis	E.	S.	14 14 54.0	18.2	43.5	9.2	33.0	0.2	23.6	N.	6.5	31.5	59.5	26.0	53.0	19.6	21 47.6
	32		W.	N.	16 15 20.2	48.2	16.0	44.0	10.0	38.0	3.0	S.	44.0	8.2	36.0	59.0	25.0	49.5	22 14.2
20	33	Lal. 23117	E.	S.	11 46 38.0	10.0	42.0	15.0	50.0	..	..	N.	..	..	54.5	29.5	7.5	46.0	52 26.5
	34		W.	N.	12 32 21.0	0.5	39.0	17.5	55.0	..	..	S.	..	..	58.0	33.0	6.5	39.5	38 10.5
	†35	Lal. 24271	E.	N.	11 59 9.5	38.5	7.0	36.5	6.3	34.0	5.0	S.	9.0	41.0	10.5	43.2	15.5	48.0	67 22.0
	†36		W.	S.	13 42 38.7	13.5	46.0	18.5	50.5	21.2	52.0	N.	56.0	26.8	55.6	25.2	55.0	23.2	50 52.5
28	37	Lal. 25625	E.	S.	12 41 24.5	48.5	13.1	37.1	0.4	26.0	..	N.	..	49.1	16.1	41.0	7.0	33.8	48 0.1
	38		W.	N.	14 47 20.0	47.0	13.1	39.0	4.4	31.1	..	S.	..	54.5	21.0	44.3	8.7	32.3	53 56.5
	39	Lal. 26013	E.	S.	13 3 27.5	55.2	21.3	48.5	14.5	43.7	8.8	N.	59.5	25.2	56.0	24.8	54.0	24.0	10 54.0
	40		W.	N.	14 55 0.0	30.0	0.0	29.9	58.1	29.0	55.5	S.	44.5	10.9	40.4	7.2	33.6	0.5	62 27.2
29	41	Lal. 25860	E.	S.	11 59 36.2	49.9	3.0	16.0	29.5	43.8	56.0	N.	48.2	1.0	15.0	28.2	42.0	55.4	63 9.0
	42		W.	N.	15 53 0.0	14.0	27.3	40.8	54.1	8.5	21.2	S.	14.0	26.0	40.0	53.6	7.0	20.2	56 33.3

DATE.	CLOCK +AZIMUTH.	CLOCK'S HOURLY RATE.
	h.	s.	s.
May 6,	13	+ 17.22	+ 0.031
18,	14	10.82	— 0.030
28,	14	+ 22.70	— 0.030
29,	14	— 6.84	+ 0.015

May 11. Clock stopped. Mounted a new gridiron pendulum.
29. 4h sid. Shortened pendulum 0.3 div. of adjusting screw.

LEVEL READINGS. Means. N.	Means. S.	S. — N. Dir.	Corr. for Level. "	MEAN OF WIRES H. M. S.	Correction in Right Ascension. s.	OBSERVED R. Ascension. H. M. S.	OBSERVED N. Declination. ° ′ ″	REDUCTION TO 1850.0 R. A. s.	REDUCTION TO 1850.0 Decl. ″	Magnitude.	Observer.	OBJECT.
33.35	34.20	+0.85	+0.38	12 41 40.06	+ 17.23	12 41 57.29	36 9 21.72	+ 6.60	—54.87	10	H.	Lal. 23919.
36.65	37.22	0.57										
33.85	34.30	0.45	0.22	12 27 26.98	17.20	12 27 44.18	37 16 7.37	6.81	55.63	8		Lal. 23537.
36.11	36.50	0.39										
33.90	34.45	0.55	0.17	12 18 34.52	17.27	12 18 51.79	37 57 37.09	6.96	55.51	10		Lal. 23269.
35.66	35.72	0.06										
34.20	34.45	+0.25	0.05	13 7 49.34	17.25	13 8 6.59	36 15 19.90	6.20	53.39	8		Lal. 24615.
37.40	37.35	—0.05										
34.40	34.80	+0.40	0.03	13 35 39.08	17.29	13 35 56.37	35 45 38.83	5.82	50.88	7		Anon.
38.05	37.75	—0.30										
34.50	34.95	+0.45	0.17	13 6 17.53	17.25	13 6 34.78	37 41 57.86	6.18	53.79	8		Lal. 24579.
36.70	36.87	0.17										
34.90	35.05	0.15	0.15	13 2 19.51	17.18	13 2 36.69	38 14 20.61	6.23	54.17	7.8		(4407)
36.30	36.70	+0.40										
42.60	41.37	—1.23	0.35	14 4 26.18	10.80	14 4 36.98	33 1 1.12	5.62	49.89	7		(4714)
44.22	44.22	0.00										
42.47	41.47	1.00	0.63	13 44 53.69	10.85	13 45 4.54	35 12 15.53	5.77	52.52	6		(4632)
44.55	43.29	1.26										
42.55	41.47	1.08	0.33	13 57 46.92	10.75	13 57 57.67	35 9 28.72	5.59	51.07	10		Lal. 25860.
44.35	44.27	0.08										
42.65	41.50	1.15	0.56	14 38 41.07	10.74	14 38 51.81	33 26 21.23	5.18	45.18	8		Lal. 26923.
45.17	44.27	0.90										
42.80	41.65	1.15	0.60	13 47 52.17	10.82	13 48 2.99	37 49 28.80	6.08	55.54	9.10		Lal. 25625.
44.35	43.35	1.00										
42.95	41.70	1.25	0.64	14 21 47.45	10.79	14 21 58.24	36 53 1.46	5.19	48.24	8		(4797)
44.50	43.45	1.05										
43.70	42.50	1.20	0.70	15 25 24.88	10.79	15 25 35.67	37 8 27.23	4.43	37.24	8		Lal. 28347.
45.05	43.75	1.30										
43.85	42.65	1.20	0.70	15 18 35.74	10.79	15 18 46.53	37 53 12.10	4.37	38.66	8		μ^2 Bootis.
45.05	43.75	1.30										
43.85	42.65	1.20	0.70	15 18 34.31	10.79	15 18 45.10	37 54 59.25	4.40	38.67	5		μ^1 Bootis.
45.05	43.75	1.30										
43.45	42.00	1.45	0.88	12 12 23.97	. .	. . .	38 45 7.61	. .	58.67	8		Lal. 23117.
44.80	43.10	1.70										
43.80	42.55	1.25	0.77	12 55 0.74	. .	. . .	38 10 17.35	. .	57.42	9		Lal. 24271.
45.75	44.25	1.50										
15.65	13.67	1.98	1.12	13 47 40.35	22.70	13 48 3.05	37 49 30.18	5.69	54.97	8.9		Lal. 25625.
17.35	15.35	2.00										
15.35	14.12	1.23	0.91	14 2 57.28	+ 22.82	14 3 20.10	38 3 20.04	5.44	53.30	9		Lal. 26013.
17.35	15.35	2.00										
11.65	10.25	1.40	—1.05	13 58 4.76	— 6.78	13 57 57.98	35 9 32.87	+ 5.67	—53.48	10		Lal. 25860.
16.50	14.15	—2.35										

1, 5. Very faint.
27. Unsteady.
35. Hazy. Star almost too faint for observation.

ASSUMED LATITUDE 38° 53′ 38″.80 NORTH.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					h. m. s.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	m. s.
May 29	1	(4407)	E.	N.	12 9 14.0	44.0	14.0	45.2	16.1	45.2	16.9	S.	28.0	1.5	33.4	7.5	42.0	16.7	17 52.5
	2		W.	S.	13 47 36.3	11.0	46.9	20.8	55.9	27.0	0.7	N.	10.9	42.0	12.2	43.0	14.0	44.0	56 14.0
	3	(4536)	E.	S.	12 26 0.0	25.0	50.5	16.7	42.0	10.0	33.5	N.	17.2	42.3	11.9	39.0	7.0	35.0	33 3.5
	4		W.	N.	14 23 8.6	37.5	5.9	33.9	0.9	30.1	54.8	S.	40.1	4.0	31.4	57.0	22.9	48.2	30 14.1
	5	(4797)	E.	N.	12 53 31.8	50.0	7.6	26.0	44.5	2.0	20.6	S.	34.2	53.0	11.1	29.9	48.9	8.0	58 27.0
	6		W.	S.	15 45 44.0	3.2	22.3	40.9	0.2	17.7	36.5	N.	51.0	8.9	26.0	45.0	3.0	21.1	50 39.0
	7	Lal. 26013	E.	S.	13 3 58.5	25.0	51.0	19.0	45.0	14.8	..	N.	..	56.0	26.8	54.6	25.0	54.5	11 24.5
	8		W.	N.	14 55 28.8	59.0	28.9	58.0	26.9	58.0	..	S.	..	40.0	9.0	35.0	2.0	29.0	62 56.0
	9	(4778)	E.	N.	13 13 10.0	34.5	59.9	25.0	51.0	15.0	40.5	S.	26.0	53.5	19.0	46.1	13.1	41.7	20 8.8
	10		W.	S.	15 14 26.0	53.2	22.0	48.8	16.6	42.0	9.0	N.	54.0	20.0	44.5	10.6	35.5	1.0	21 25.8
	11	Lal. 28347	E.	N.	14 2 36.5	55.4	15.0	34.8	54.5	12.9	32.0	S.	51.1	11.8	30.0	51.0	11.5	32.0	7 52.0
	12		W.	S.	16 43 32.6	53.5	13.6	34.0	54.0	13.5	33.2	N.	52.5	12.8	30.9	50.0	10.0	29.5	48 49.0
	13	μ^2 Bootis	E.	S.	14 14 24.0	48.5	13.0	37.7	2.7	29.0	52.8	N.	33.0	57.0	24.0	51.0	17.0	44.0	21 11.0
	14		W.	N.	16 16 35.0	2.5	29.5	56.0	22.0	50.4	14.0	S.	54.5	18.0	44.0	9.0	33.5	58.0	23 23.5
	15	μ^1 Bootis	E.	S.	14 15 14.2	38.8	4.0	29.0	54.0	21.0	45.0	N.	25.8	51.0	18.6	45.7	12.8	40.0	22 8.0
	16		W.	N.	16 15 36.0	3.7	31.5	58.0	25.0	53.0	17.5	S.	59.0	23.0	50.5	15.0	40.5	5.4	22 30.0
June 7	17	Anon.	E.	N.	13 40 26.5	52.8	17.2	43.0	8.6	33.0	..	S.	..	11.0	35.8	3.2	31.0	58.5	47 26.2
	18		W.	S.	15 41 41.0	8.1	36.4	3.2	31.5	55.8	..	N.	..	33.0	57.9	23.0	49.0	14.2	48 38.8
9	19	δ Bootis	E.	N.	12 52 58.5	21.4	33.2	45.0	56.9	8.8	19.8	S.	30.0	41.0	53.0	5.0	17.0	29.0	56 52.5
	20		W.	S.	17 21 58.0	21.2	33.2	45.2	57.0	9.0	20.5	N.	30.9	42.0	53.9	5.2	17.2	29.0	25 51.8
	21	Anon.	E.	N.	13 25 16.0	52.0	30.0	6.0	44.0	18.5	57.0	S.	37.0	18.7	57.5	42.3	25.5	11.2	35 57.5
	22		W.	S.	14 44 42.5	28.0	14.3	56.5	41.0	21.5	4.0	N.	42.5	21.2	57.0	35.0	11.2	47.5	55 23.0
	23	Lal. 29341	E.	S.	13 51 58.9	11.5	23.5	36.1	48.2	1.6	13.0	N.	3.0	14.5	28.0	40.5	53.3	5.5	55 18.5
	24		W.	N.	18 1 43.0	56.0	8.0	21.0	33.3	47.0	58.5	S.	48.0	59.0	12.2	24.6	37.0	49.9	5 2.0
	25	ζ^1 Coronæ Borealis	E.	S.	14 10 32.0	51.3	10.5	29.7	48.2	9.0	26.6	N.	43.0	1.1	21.8	41.2	1.0	21.0	15 41.8
	26		W.	N.	16 51 42.8	2.8	23.0	43.0	2.7	23.0	41.5	S.	57.8	15.0	36.0	55.0	13.9	33.0	56 52.0
	27	ζ^2 Coronæ Borealis	E.	S.	14 10 33.0	52.3	11.5	30.7	49.2	10.0	27.6	N.	44.0	2.1	22.8	42.2	2.0	22.0	15 42.8
	28		W.	N.	16 51 41.0	1.0	21.0	41.0	0.7	21.0	39.5	S.	56.0	13.0	34.0	53.0	12.0	31.0	56 50.5
	29	Lal. 28641	E.	N.	14 20 25.5	47.5	8.5	30.5	52.5	13.5	35.1	S.	4.5	27.0	48.2	11.4	34.5	58.0	26 21.0
	30		W.	S.	16 43 23.2	46.5	9.2	32.0	55.2	16.5	39.0	N.	8.5	30.7	51.0	13.0	35.0	56.8	49 18.0
	31	τ Coronæ Borealis	E.	S.	14 35 ..	14.0	32.0	50.0	7.4	26.9	43.0	N.	55.0	12.0	31.5	49.3	8.4	26.9	39 ..
	32		W.	N.	17 27 ..	28.8	47.3	6.0	24.0	43.5	0.6	S.	12.1	28.7	48.0	5.5	23.5	41.0	31 ..
	33	λ Coronæ Borealis	E.	N.	15 2 25.0	58.8	33.0	7.5	42.8	16.0	52.0	S.	19.8	58.0	34.5	15.0	54.6	35.7	12 17.7
	34		W.	S.	16 28 19.0	1.6	42.2	22.0	2.7	39.1	18.0	N.	44.5	20.5	53.8	29.3	3.0	38.0	38 11.5
11	35	κ Coronæ Borealis	E.	S.	14 2 52.0	8.0	23.0	38.4	53.8	10.0	24.1	N.	25.0	39.3	56.0	11.8	27.0	43.0	6 59.0
	36		W.	N.	17 24 3.9	19.9	35.7	51.5	6.8	23.2	38.0	S.	39.5	54.0	10.0	25.0	40.5	56.0	28 11.0
	37	ζ^1 Coronæ Borealis	E.	N.	14 10 28.5	47.2	7.0	26.5	45.8	4.0	24.0	S.	43.8	4.0	22.8	42.0	3.2	23.5	15 44.2
	38		W.	S	16 51 37.0	57.8	18.0	38.8	58.8	17.4	37.5	N.	56.4	16.2	34.8	54.5	14.0	33.0	56 52.6
	39	ζ^2 Coronæ Borealis	E.	N.	14 10 29.5	48.2	8.0	27.5	46.8	5.0	25.0	S.	44.8	5.0	23.8	43.0	4.2	24.5	15 45.2
	40		W.	S.	16 51 35.0	55.8	16.0	36.8	56.8	15.4	35.5	N.	54.4	14.4	33.0	52.7	12.0	31.3	56 50.8
	41	Lal. 28641	E.	S.	14 20 28.5	50.0	11.5	32.3	53.4	17.0	37.0	N.	1.4	22.0	45.6	8.0	30.0	53.0	26 16.2
	42		W.	N.	16 43 23.8	47.0	10.0	32.8	54.5	18.0	38.6	S.	4.0	24.5	47.0	7.5	30.0	51.0	49 12.5

DATE.	CLOCK +AZIMUTH.	CLOCK'S HOURLY RATE.
	h. s.	s.
May 29, 14	— 6.84	+0.015
June 9, 15	2.74	.038
11, 16	0.88	.040

No. for ref.	LEVEL READINGS. Means. N.	Means. S.	S. — N. Div.	Corr. for Level. "	MEAN OF WIRES. H. M. S.	Correction in Right Ascension. s.	OBSERVED R. Ascension. H. M. S.	OBSERVED N. Declination. ° ′ ″	REDUCTION TO 1850.0 R. A. s.	REDUCTION TO 1850.0 Decl. ″	Magnitude.	Observer.	OBJECT.
1	12.00	9.60	—2.40	−1.27	13 2 44.13	— 6.90	13 2 37.23	38 14 26.38	+ 6.46	—58.80	6	H.	(4407)
2	14.65	12.52	2.13										
3	12.55	10.22	2.33	1.45	13 28 6.54	6.76	13 27 59.78	37 58 8.05	6.06	57.02	5		(4536)
4	15.50	12.65	2.85										
5	13.24	10.83	2.41	1.48	14 22 5.48	6.79	14 21 58.69	36 53 5.32	5.23	50.84	7		(4797)
6	16.62	13.69	2.93										
7	13.30	11.27	2.03	1.19	14 3 26.87	6.81	14 3 20.06	38 3 21.33	5.45	53.47	9.10		Lal. 26013.
8	15.65	13.45	2.20										
9	13.65	11.87	1.78	1.03	14 17 17.57	6.82	14 17 10.75	37 54 9.90	5.25	51.67	8.9		(4778)
10	15.75	13.87	1.88										
11	14.65	12.75	1.90	1.51	15 25 42.48	6.65	15 25 35.83	37 8 31.19	4.41	40.11	7.8		Lal. 28347.
12	17.54	14.00	3.54										
13	15.20	12.75	2.45	1.53	15 18 53.38	6.73	15 18 46.65	37 53 15.94	4.40	41.53	..		μ^2 Bootis.
14	16.92	13.87	3.05										
15	15.20	12.75	2.45	1.53	15 18 52.00	6.73	15 18 45.27	37 55 3.24	4.40	41.53	..		μ^1 Bootis.
16	16.92	13.87	3.05										
17	16.15	15.20	0.95	−0.45	14 44 33.28	. .	. . . .	37 20 52.80	. .	49.57	6		Anon.
18	17.65	17.00	—0.65										
19	10.60	11.75	+1.15	+0.11	15 9 25.19	2.63	15 9 22.56	33 53 26.08	4.90	45.38	4		δ Bootis.
20	14.27	13.50	—0.77										
21	11.70	11.46	0.24	−0.07	14 10 19.94	2.82	14 10 17.12	38 27 52.72	5.42	55.02	10		Anon.
22	12.50	12.47	0.03										
23	11.87	11.80	0.07	0.23	15 58 30.56	2.66	15 58 27.90	34 36 7.47	4.31	35.93	7.8		Lal. 29341.
24	14.60	13.85	—0.75										
25	12.00	12.35	+0.35	0.11	15 33 42.13	2.59	15 33 39.54	37 8 14.33	4.38	41.63	6		ζ^1 Coronæ Borealis.
26	14.15	13.40	—0.75										
27	12.00	12.35	+0.35	0.11	15 33 41.68	2.59	15 33 39.09	37 8 18.21	4.38	41.61	7		ζ^2 Coronæ Borealis.
28	14.15	13.40	—0.75										
29	11.90	12.50	+0.60	0.10	15 34 51.87	2.52	15 34 49.35	37 30 54.37	4.30	41.20	8.9		Lal. 28641.
30	14.15	13.17	—0.98										
31	12.44	12.22	0.22	0.25	16 3 27.72	2.66	16 3 25.06	36 52 21.69	4.06	35.23	5		τ Coronæ Borealis.
32	14.27	13.61	—0.66										
33	12.40	12.96	+0.56	0.16	15 50 18.41	2.37	15 50 16.04	38 23 38.34	4.05	38.13	6		λ Coronæ Borealis.
34	14.07	12.95	—1.12										
35	15.00	12.00	3.00	1.36	15 45 31.62	0.80	15 45 30.82	36 8 14.35	4.31	40.22	5		κ Coronæ Borealis.
36	17.65	15.80	1.85										
37	15.12	12.17	2.95	1.51	15 33 40.47	0.85	15 33 39.62	37 8 14.95	4.39	42.17	..		ζ^1 Coronæ Borealis.
38	17.65	15.20	2.45										
39	15.12	12.17	2.95	1.51	15 33 40.01	0.85	15 33 39.16	37 8 18.86	4.39	42.17	..		ζ^2 Coronæ Borealis.
40	17.65	15.20	2.45										
41	15.12	12.55	2.57	−1.42	15 34 50.27	— 0.90	15 34 49.37	37 30 54.96	+ 4.31	— 41.74	8.9		Lal. 28641.
42	17.65	15.05	—2.60										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. S.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
June 11	1	(5411)	E.	N.	14 36 29.2	47.3	5.0	22.9	41.0	58.0	16.1	S.	30.2	48.5	6.0	24.6	43.1	1.9	41 21.0
	2		W.	S.	17 31 11.8	30.6	49.2	8.0	26.5	44.0	2.3	N.	15.4	33.6	50.5	8.8	27.0	44.5	36 2.5
	3	(5026)	E.	S.	14 50 34.0	57.0	22.0	48.0	13.5	41.0	8.0	N.	52.0	24.0	56.0	32.0	10.0	50.0	58 31.0
	4		W.	N.	15 17 6.0	47.0	27.5	5.0	40.0	13.5	45.5	S.	30.0	56.5	23.0	48.5	14.5	38.5	25 2.0
	5	λ Coronæ Borealis	E.	N.	15 2 21.0	58.0	32.2	6.5	42.0	14.2	50.8	S.	21.0	59.5	36.2	16.5	56.5	37.0	12 19.5
	6		W.	S.	16 28 14.1	56.2	37.9	18.0	57.9	34.5	13.1	N.	43.2	19.2	52.5	28.0	1.5	36.0	38 20.0
15	†7	(5026)	E.	N.	14 50 ..	48.0	13.0	37.0	2.5	30.0	55.0	S.	2.5	33.5	6.0	42.0	21.0	59.0	57 ..
	†8		W.	S.	15 17 ..	38.0	17.0	53.5	28.4	4.0	36.0	N.	42.0	7.0	33.5	1.0	24.0	48.0	24 ..
24	9	Lal. 28801	E.	S.	14 12 55.0	13.5	31.0	49.5	7.3	26.6	43.4	N.	55.8	12.6	32.5	51.1	9.6	29.4	17 48.0
	10		W.	N.	17 3 27.5	47.0	5.6	25.0	43.0	2.8	19.2	S.	31.3	48.0	7.5	25.0	43.5	1.5	8 20.0
	11	Lal. 28799	E.	S.	14 13 2.0	20.4	38.6	56.4	14.1	33.7	51.0	N.	3.0	20.2	40.2	58.5	17.3	36.2	17 55.5
	12		W.	N.	17 3 17.2	37.0	55.0	14.0	33.5	53.0	9.5	S.	20.5	37.4	57.0	15.5	33.2	50.8	8 9.8
	†13	Anon.	E.	N.	14 50 20.0	58.0	37.0	16.0	56.0	36.5	16.5	S.	10.2	57.0	41.5	29.0	19.5	10.0	62 1.0
	†14		W.	S.	16 2 47.0	39.0	29.5	18.5	6.8	50.8	37.5	N.	33.5	14.3	53.0	34.0	12.5	52.0	14 29.5
25	15	Anon.	E.	S.	14 50 24.8	2.5	41.7	20.7	59.2	42.0	19.5	N.	6.5	48.0	37.5	23.7	11.1	0.5	61 53.7
	16		W.	N.	16 2 55.0	47.0	37.0	24.5	11.0	58.5	10.0	S.	28.0	4.2	47.0	26.6	6.0	45.0	14 23.0
July 12	17	Lal. 32165	E.	S.	16 13 8.0	29.6	49.0	8.0	30.0	51.0	..	N.	..	55.0	15.0	36.0	58.0	21.0	18 42.0
	18		W.	N.	18 41 36.0	57.0	21.0	41.0	3.0	25.0	..	S.	..	29.0	50.0	10.0	31.0	51.0	47 11.0
	19	α Lyræ	E.	S.	17 54 58.0	39.0	24.0	10.0	56.0	45.0	30.0	N.	54.0	46.0	48.0	48.0	50.0	55.0	69 3.0
	20		W.	N.	18 53 53.0	1.5	8.0	9.0	11.0	10.0	1.0	S.	24.0	12.0	58.0	46.0	32.0	11.0	68 0.0
16	21	ϑ Herculis	E.	S.	16 30 41.2	1.6	21.1	41.3	0.9	21.1	40.9	N.	59.9	19.1	41.1	0.9	21.9	42.8	36 4.4
	22		W.	N.	19 5 19.2	40.6	1.5	22.3	42.4	4.6	23.3	S.	42.6	0.8	22.6	41.7	1.4	21.1	10 41.7
	23	ζ Lyræ	E.	S.	17 23 17.6	38.2	59.4	20.3	41.1	3.5	23.6	N.	47.1	7.6	29.5	51.8	14.2	35.8	28 58.2
	24		W.	N.	19 49 23.6	46.4	8.1	31.2	51.7	15.8	35.4	S.	0.4	19.6	42.3	2.8	23.2	43.9	55 5.7
23	25	ϑ Herculis	E.	N.	16 30 34.0	53.2	14.3	34.4	54.6	14.1	34.1	S.	55.2	16.2	35.1	57.2	18.1	40.2	36 1.6
	26		W.	S.	19 5 9.9	31.1	52.3	13.9	35.2	54.7	15.6	N.	35.3	55.5	15.2	35.6	55.2	16.1	10 35.4
	†27	Lal. 36125	E.	S.	18 23 45.1	22.6	0.9	40.4	19.1	2.3	39.5	N.	35.4	16.8	7.4	54.1	41.7	31.8	35 22.7
	†28		W.	N.	19 35 42.2	32.3	22.3	12.7	58.4	48.3	29.5	S.	21.3	1.4	43.6	23.1	2.5	41.6	47 18.4
24	29	ϑ Herculis	E.	S.	16 30 34.5	54.6	14.7	34.2	53.1	15.3	33.4	N.	54.7	13.9	35.9	56.1	16.8	37.2	35 58.8
	30		W.	N.	19 5 9.6	31.2	52.3	13.2	33.6	55.2	13.9	S.	35.2	54.1	15.8	35.1	54.7	15.2	10 34.4
	31	ϑ Lyræ	E.	S.	18 5 35.4	0.3	24.1	48.2	13.3	39.4	2.6	N.	45.3	9.2	37.5	1.3	28.1	54.8	12 22.1
	32		W.	N.	20 8 53.3	20.8	46.9	14.2	39.2	7.4	31.5	S.	13.7	35.4	3.2	26.9	51.6	15.7	15 40.3
28	33	α Lyræ	E.	S	17 54 47.7	32.6	16.4	58.6	46.5	36.6	21.7	N.	52.6	43.4	44.8	44.6	51.8	54.7	69 4.6
	34		W.	N.	19 53 32.8	41.7	50.8	52.9	52.6	53.4	47.5	S.	17.7	1.6	48.7	37.6	21.7	6.3	67 49.8
Aug. 2	35	α Lyræ	E.	S.	17 54 46.6	30.8	15.7	59.9	46.2	36.4	21.0	N.	51.9	44.6	45.3	45.0	47.3	54.4	69 3.6
	36		W.	N.	18 53 30.5	36.6	42.5	47.1	47.3	49.6	42.9	S.	8.1	54.3	43.7	30.2	14.4	58.5	67 42.6
	†37	Lal. 36125	E.	S.	18 23 42.4	20.7	58.7	36.5	17.4	59.6	37.8	N.	32.4	15.7	4.3	48.8	40.4	31.5	35 20.6
	†38		W.	N.	19 35 38.1	29.8	19.9	8.7	56.4	44.3	25.8	S.	14.2	51.3	35.4	13.7	52.5	31.4	47 10.6
11	39	Anon.	E.	S.	17 12 18.8	31.6	44.6	57.3	10.2	24.1	35.3	N.	26.2	39.0	52.1	5.2	18.4	31.3	15 44.8
	40		W.	N.	21 13 12.1	24.7	38.1	51.2	3.9	18.1	30.1	S.	21.0	32.1	46.2	58.4	11.3	24.1	16 37.9
	41	Lal. 36125	E.	N.	18 23 39.3	18.2	57.7	36.2	18.4	55.3	40.6	S.	36.2	22.1	6.2	54.4	44.3	36.1	35 28.6
	42		W.	S.	19 35 29.2	14.6	8.2	58.4	47.7	32.4	17.9	N.	16.2	58.4	37.6	16.8	58.2	37.1	47 16.2

DATE.	CLOCK +AZIMUTH.	CLOCK'S HOURLY RATE.
	h.	s.	s.
June, 11,	16	— 0.88	+ 0.040
July 16,	18	+ 21.71	
23,	19	27.79	
24,	19	28.66	
11,	22	32.92	0.020

7, 13. Star unsteady.
27, 37. Double. Observed center of interval between the two.

LEVEL READINGS.			Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED		REDUCTION TO 1850.0		Magnitude.	Observer.	OBJECT.
Means.		S.—N.				R. Ascension.	N. Declination.	R. A.	Decl.			
N.	S.	Div.	"	H. M. S.	S.	H. M. S.	° ′ ″	S.	″			
15.55	12.60	—2.95	−1.51	16 6 16.05	— 0.92	16 6 15.13	36 49 30.96	+ 4.08	—35.07	6.7	H.	(5411)
18.15	15.60	2.55										
15.65	13.10	2.55	1.35	15 7 48.39	. .	. . .	38 50 33.45	. .	47.01	7		(5026)
16.20	13.85	2.35										
15.99	13.20	2.79	1.47	15 50 17.00	— 0.93	15 50 16.07	38 23 39.08	4.06	38.70	5		λ Coronæ Borealis.
17.50	14.95	2.55										
21.42	18.30	3.12	1.88	15 7 48.41	. .	. . .	38 50 32.09	. .	47.72	7		(5026)
22.05	18.35	3.70										
13.50	12.05	1.45	0.90	15 40 37.58	. .	. . .	36 55 27.77	. .	43.50	9		Lal. 28801.
16.20	14.37	1.83										
13.50	12.05	1.45	0.90	15 40 36.12	. .	. . .	36 55 52.25	. .	43.51	9.10		Lal. 28799.
16.20	14.37	1.83										
15.30	12.65	2.65	1.34	15 32 24.50	. .	. . .	38 32 1.31	. .	45.35	9		Anon.
16.12	13.90	2.22										
14.64	12.95	1.69	−0.78	15 32 23.70	. .	. . .	38 32 2.02	. .	45.35	9		Anon.
15.25	14.10	—1.15										
12.44	13.37	+0.93	+0.66	17 30 9.52	. .	. . .	37 24 21.16	. .	23.12	8	*P	Lal. 32165.
12.89	14.11	1.22										
12.30	12.97	0.67	0.49	18 31 27.95	. .	. . .	38 38 55.70	. .	6.66	..		α Lyræ.
12.72	13.52	0.80										
12.09	14.20	2.11	1.18	17 50 41.56	+ 21.79	17 51 3.35	37 16 44.37	3.33	18.86	..		θ Herculis.
14.82	16.22	1.40										
13.51	14.94	1.43	+0.47	18 39 11.35	21.85	18 39 33.20	37 27 11.94	3.13	6.33	..		ζ¹ Lyræ.
16.27	16.52	0.25										
10.61	10.65	+0.04	−0.03	17 50 35.11	27.83	17 51 2.94	37 16 45.88	3.39	20.71	..		θ Herculis.
14.02	13.67	—0.35										
13.72	13.40	0.32	−0.13	19 5 32.19	27.77	19 5 59.96	38 32 21.81	2.99	1.50	..		Lal. 36125.
14.55	14.31	—0.24										
10.52	11.31	+0.79	+0.12	17 50 34.48	28.76	17 51 3.24	37 16 45.72	3.39	20.96	..		θ Herculis.
13.35	13.10	—0.25										
12.69	13.07	+0.38	0.00	19 10 37.92	28.85	19 11 6.77	37 52 10.92	3.07	0.46	5		θ Lyræ.
14.22	13.85	—0.37										
19.47	20.39	+0.92	+0.25	18 31 18.95	. .	. . .	38 38 58.33	. .	10.95	..		α Lyræ.
21.35	21.75	+0.40										
16.21	15.78	—0.43	−0.40	18 31 15.61	. .	. . .	38 39 0.55	. .	12.13	..		α Lyræ.
18.47	17.18	1.29										
17.21	16.79	0.42	0.58	19 5 27.82	. .	. . .	38 32 23.08	. .	4.12	..		Lal. 36125.
19.52	17.51	2.01										
14.40	11.87	2.53	1.90	19 14 28.15	33.02	19 15 1.17	36 28 12.69	3.32	4.04	10		Anon.
18.59	13.80	4.79										
15.63	12.96	2.67	−1.27	19 5 27.16	+ 32.89	19 6 0.05	38 32 25.28	+ 3.12	— 6.41	..		Lal. 36125.
16.43	13.62	—2.81										

* Prof. J. J. Pettigrew, U. S. N.

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G	F.	E.	D.	C.	B.	A.
					H. M. s	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
Aug. 11	†1	Lal. 39834	E.	N.	19 18 7.3	29.6	51.3	13.9	36.6	57.2	19.2	S.	50.4	14.4	36.1	59.3	22.6	45.1	24 10.5
	2		W.	S.	21 38 3.4	27.3	51.2	14.1	38.2	0.1	23.7	N.	55.2	18.3	39.2	1.7	23.8	45.4	44 7.1
–	3	Lal. 45323	E.	N.	22 2 51.2	18.1	46.4	14.2	42.7	8.9	37.9	S.	35.6	6.1	32.9	4.9	35.8	6.1	10 37.4
	4		W.	S.	23 51 55.4	26.3	57.1	28.6	59.4	28.1	57.9	N.	55.2	24.4	50.4	19.5	46.3	15.9	59 49.6
	5	Lal. 47049	E.	N.	22 50 47.8	15.1	40.8	8.1	35.2	0.7	28.0	S.	20.4	49.0	15.2	44.2	14.2	43.5	58 13.4
	6		W.	S.	0 45 16.1	46.3	16.2	44.6	14.3	41.4	10.4	N.	0.6	29.3	55.4	21.9	48.2	16.3	52 41.5
	7	Lal. 421	E.	S.	23 10 29.5	55.4	20.1	45.3	10.2	37.5	0.2	N.	41.6	5.4	33.1	58.9	27.1	55.2	17 21.4
	8		W.	N.	1 11 28.6	55.4	24.3	50.8	16.2	45.2	8.9	S.	49.5	12.8	39.7	4.4	30.3	53.8	18 20.5
13	9	ϑ Lyræ	E.	N.	18 5 29.4	53.5	19.1	44.3	10.1	32.4	58.6	S.	42.7	9.3	34.5	0.9	28.8	54.7	12 22.7
	10		W.	S.	20 8 41.4	8.3	35.4	2.7	29.6	54.6	21.1	N.	7.3	31.8	55.7	19.3	46.7	11.3	15 35.7
	11	Lal. 38202	E.	S.	18 42 53.4	19.9	38.7	1.8	24.6	48.4	11.2	N.	41.3	4.6	27.7	53.4	17.8	40.5	49 6.7
	12		W.	N.	20 55 58.5	22.7	47.6	11.3	36.5	1.3	24.6	S.	54.5	16.3	40.4	2.5	26.3	48.7	62 11.7
	13	(6990)	E.	N.	18 58 28.7	49.4	12.3	35.5	57.4	18.1	40.9	S.	12.7	36.4	57.5	20.9	43.8	8.2	64 38.6
	14		W.	S.	21 18 43.4	7.3	31.4	54.6	18.8	40.4	3.7	N.	36.1	57.6	18.1	39.8	3.9	25.6	24 46.8
	15	τ Cygni	E.	S.	19 51 2.4	22.9	43.2	3.7	24.1	46.7	5.6	N.	27.7	46.4	9.8	31.5	52.6	15.3	56 37.4
	16		W.	N.	22 19 43.7	6.3	27.5	49.6	10.6	33.7	54.2	S.	15.8	35.1	56.6	17.2	37.6	58.6	25 18.5
18	17	Lal. 36774	E.	N.	17 52 9.7	27.8	45.7	5.1	23.8	40.9	59.6	S.	14.5	33.3	51.7	11.1	29.9	49.8	57 8.6
	18		W.	S.	20 41 27.8	47.4	6.9	25.6	45.1	3.4	22.1	N.	37.8	55.9	14.3	33.5	51.7	9.4	46 28.8
	†19	Lal. 44466	E.	S.	21 9 29.2	48.4	7.4	24.6	44.2	2.6	20.4	N.	33.9	50.7	12.1	29.8	48.6	8.4	14 27.9
	†20		W.	N.	23 56 23.7	43.7	3.7	22.9	41.4	2.6	19.7	S.	32.2	49.3	8.8	26.3	45.6	3.4	61 21.7
	21	Lal. 421	E.	S.	23 10 27.6	52.1	17.2	41.9	7.1	33.5	57.1	N.	36.8	1.9	29.6	56.1	23.3	49.5	17 18.2
	22		W.	N.	1 11 26.2	53.3	20.8	46.2	12.3	41.6	5.1	S.	45.3	8.9	35.6	0.8	24.1	49.8	18 14.4
19	†23	Anon.	E.	N.	17 51 7.0	19.8	33.0	45.5	59.0	11.5	24.8	S.	17.8	30.5	42.8	56.0	10.0	23.0	54 36.2
	†24		W.	S.	21 52 38.0	51.0	4.5	17.5	31.0	44.0	56.7	N.	50.5	3.8	16.0	29.0	42.0	55.0	56 8.3
	25	Anon.	E.	N.	17 51 12.0	25.5	..	51.0	4.0	17.0	29.9	S.	22.5	36.3	48.5	2.3	..	28.5	54 42.5
	26		W.	S.	21 52 19.0	32.5	..	59.0	12.8	25.0	38.8	N.	32.1	45.0	58.0	11.0	..	37.0	55 50.0
	27	Anon.	E.	S.	18 2 ..	11.8	28.6	46.5	2.8	20.8	..	N.	..	2.0	21.3	38.2	57.2	14.5	6 ..
	28		W.	N.	21 0 ..	48.0	5.0	22.8	40.0	59.0	..	S.	..	39.4	58.2	15.4	32.0	50.0	4 ..
	29	Anon.	E.	N.	18 12 11.0	27.0	43.0	58.2	14.0	28.8	..	S.	..	4.5	19.0	35.0	51.5	8.0	16 24.6
	30		W.	S.	21 32 35.0	51.0	7.7	24.0	40.0	55.0	..	N.	..	30.9	46.0	2.0	18.0	33.5	36 48.9
	31	Lal. 38283	E.	N.	18 12 32.8	48.0	4.0	19.5	35.0	50.1	6.2	S.	10.0	26.0	41.0	57.7	14.0	29.5	16 45.6
	32		W.	S.	21 32 17.0	33.0	50.0	6.0	22.0	37.8	54.0	N.	58.0	14.0	29.0	44.8	0.8	16.7	36 32.0
	33	Anon.	E.	S.	18 23 13.0	35.5	47.2	58.3	10.1	21.2	33.5	N.	40.4	52.5	4.0	15.5	27.3	39.0	27 2.2
	34		W.	N.	22 53 59.8	23.0	34.0	46.0	58.0	9.1	21.9	S.	28.4	40.2	52.0	3.3	15.0	26.5	57 48.8
	35	Lal. 37597	E.	N.	18 35 30.0	55.4	21.8	48.0	14.8	39.4	6.8	S.	56.8	23.3	49.9	17.5	46.2	15.3	42 44.1
	36		W.	S.	20 32 51.5	20.6	49.0	17.6	46.0	12.4	40.5	N.	29.5	57.0	22.0	48.0	14.8	40.5	40 6.3
	37	(7061)	E.	N.	19 18 30.0	55.5	21.0	47.0	13.5	38.2	4.8	S.	53.0	20.8	46.7	14.5	43.0	11.2	25 39.6
	38		W.	S.	21 17 1.3	29.5	57.9	26.3	54.4	20.5	47.9	N.	36.8	2.8	27.5	54.0	20.0	45.5	24 11.9
	†39	Lal. 41493	E.	N.	20 1 ..	..	8.5	31.8	54.0	15.0	38.0	S.	11.0	34.5	56.3	20.0	44.1	..	5 ..
	†40		W.	S.	22 19 ..	..	41.5	4.8	29.0	51.2	14.1	N.	47.0	10.7	32.2	55.0	17.0	..	24 ..
	41	(7505)	E.	S.	20 23 36.4	0.5	25.0	49.7	13.5	40.0	..	N.	..	3.5	31.0	56.9	23.4	49.0	29 16.0
	42		W.	N.	22 26 39.8	7.3	33.8	59.0	25.0	53 2	..	S.	..	17.0	44.0	7.8	33.0	56.5	33 21.0

DATE.	CLOCK +AZIMUTH.	CLOCK'S HOURLY RATE.
	h. s.	s.
Aug. 11, 22	+ 32.92	+ 0.020
13, 20	34.25	.022
18, 20	36.58	.020
19, 21	37.04	.020

1. Wire G, Tel. N. recorded 29.2.
20. Wire G, Tel. S. recorded 22.2.
23. Wire E, Tel. S. recorded 47.8.

LEVEL READINGS. Means. N.	Means. S.	S.—N.	Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED R. Ascension.	OBSERVED N. Declination.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 Decl.	Magnitude.	Observer.	OBJECT.
N.	S.	Div.	″	H. M. S.	S.	H. M. S.	° ′ ″	S.	″			
16.12	13.46	−2.66	−1.83	20 31 7.22	+ 33.01	20 31 40.23	37 34 20.62	+ 3.28	+14.52	8	P.	Lal. 39884.
18.30	14.42	3.88										
18.05	15.03	3.02	1.43	23 1 16.60	32.95	23 1 49.55	38 5 30.52	3.54	43.19	9		Lal. 45323.
19.02	15.91	3.11										
18.35	15.40	2.95	1.52	23 51 44.94	33.03	23 52 17.97	38 0 38.42	5.26	48.72	8		Lal. 47049.
19.57	16.04	3.53										
. .	. .	. .	1.58	0 14 25.01	32.97	0 14 57.98	37 54 28.56	5.61	+50.36	8		Lal. 421.
19.70	15.89	3.81										
16.81	13.61	3.20	1.67	19 10 32.17	34.34	19 11 6.51	37 52 14.26	3.19	− 5.49	6		θ Lyræ.
18.30	14.14	4.16										
17.27	14.21	3.06	1.03	19 52 32.54	34.33	19 53 6.87	37 41 59.76	3.18	+ 4.84	10		Lal. 38202.
18.52	14.70	3.82										
14.82	11.51	3.31	1.68	20 11 37.95	34.30	20 12 12.25	37 33 59.63	3.22	9.52	6		(6990)
18.70	14.84	3.86										
18.01	14.12	3.89	1.88	21 8 10.51	34.32	21 8 44.83	37 24 2.44	3.51	+23.60	4.5		τ Cygni.
19.40	15.04	4.36										
16.65	16.59	0.06	0.33	19 19 18.61	36.66	19 19 55.27	36 57 9.88	3.34	− 4.46	8		Lal. 36774.
19.85	18.49	1.36										
19.95	18.47	1.48	0.64	22 35 26.15	36.58	22 36 2.73	37 0 29.98	4.20	+37.32	9		Lal. 44466.
20.36	19.48	0.88										
19.95	18.69	−1.26	0.17	0 14 21.30	36.46	0 14 57.76	37 54 29.98	5.44	48.63	8		Lal. 421.
21.00	21.51	+0.51										
19.47	18.72	−0.75	0.58	19 53 37.30	37.08	19 54 14.38	34 53 14.01	3.51	3.65	9	H.	Anon.
22.75	20.92	1.83										
19.47	18.72	0.75	0.58	19 53 30.84	37.08	19 54 7.92	34 54 2.79	3.51	+ 3.63	10		Anon.
22.75	20.92	1.83										
19.32	19.02	0.30	0.25	19 33 30.68	37.05	19 34 7.73	36 43 53.67	3.34	− 1.27	10		Anon.
21.80	21.00	0.80										
19.52	18.85	0.67	0.45	19 54 29.88	37.04	19 55 6.92	36 9 34.19	3.38	+ 3.80	10		Anon.
22.10	21.15	0.95										
19.52	18.85	0.67	0.45	19 54 31.95	37.04	19 55 8.99	36 10 39.47	3.38	3.80	8		Lal. 38283.
22.10	21.15	0.95										
19.70	18.62	1.08	0.34	20 40 30.92	37.01	20 41 7.93	33 49 16.64	3.67	+14.49	6.7		Anon.
21.95	21.50	0.45										
19.75	18.90	0.85	0.44	19 37 48.02	37.03	19 38 25.05	37 57 57.23	3.21	− 0.31	8.9		Lal. 37597.
21.50	20.45	1.05										
20.24	19.42	0.82	0.42	20 21 20.50	37.05	20 21 57.55	37 56 50.85	3.24	+10.10	7.8		(7061)
22.00	21.01	0.99										
20.95	20.00	0.95	0.55	21 12 42.94	37.09	21 13 20.03	37 36 1.24	3.47	21.59	7		Lal. 41493.
22.65	21.20	1.45										
21.09	20.49	0.60	−0.33	21 27 58.43	+ 37.07	21 28 35.50	37 51 24.69	+ 3.56	+25.03	6		(7505)
22.25	21.45	−0.80										

ASSUMED LATITUDE 38° 53′ 38″.80 NORTH.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. S.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
Aug. 20	1	ε Bootis	E.	S.	11 18 46.0	1.5	17.0	25.2	33.2	41.0	49.0	N.	51.5	59.2	7.1	15.4	23.0	39.0	21 55.0
	2		W.	N.	17 53 31.0	47.0	3.0	11.0	19.0	27.0	35.0	S.	38.0	46.0	53.9	1.8	9.5	25.2	56 41.0
	3	α Coronæ Bor.	E.	N.	12 4 23.7	39.3	55.0	10.2	18.0	26.0	34.0	S.	52.5	1.0	8.6	16.1	32.0	47.8	8 4.0
	4		W.	S.	18 47 12.0	28.3	44.0	59.2	7.2	15.1	23.0	N.	41.5	49.2	57.2	5.1	20.9	35.9	50 51.8
25	5	Lal. 36774	E.	S.	17 52 11.4	30.4	48.8	6.7	24.6	43.1	0.9	N.	12.7	29.6	49.5	6.4	23.4	40.8	56 58.7
	6		W.	N.	20 41 29.2	47.3	7.4	25.8	45.4	4.2	21.4	S.	33.9	50.8	10.4	28.1	45.4	4.2	46 22.4
	7	Lal. 36324	E.	S.	18 23 58.6	33.5	9.1	44.2	20.3	59.7	33.8	N.	2.3	38.6	22.7	3.8	46.4	28.8	34 13.9
	8		W.	N.	19 44 47.5	32.6	16.4	59.4	39.8	23.9	1.8	S.	29.9	4.6	43.8	18.6	54.2	29.8	55 4.2
	9	Lal. 45588	E.	N.	21 45 45.7	5.8	21.9	43.1	3.2	21.4	41.3	S.	58.8	19.5	37.9	58.1	17.9	39.4	50 59.7
	10		W.	S.	0 27 8.4	28.0	48.2	9.1	29.3	47.4	7.3	N.	26.5	46.3	4.1	24.1	41.9	1.2	32 22.8
	11	Lal. 44922	E.	S.	22 6 28.7	3.2	42.1	17.8	56.7	37.6	13.9	N.	54.4	34.9	19.6	4.4	51.3	36.5	17 24.6
	12		W.	N.	23 22 43.9	31.4	18.4	3.3	46.8	33.6	12.5	S.	50.9	27.1	9.9	45.6	23.4	58.5	33 37.2
	13	Lal. 47049	E.	S.	22 50 49.4	14.9	40.6	8.7	33.1	2.5	27.6	N.	14.2	39.8	10.1	37.5	5.4	34.6	58 4.5
	14		W.	N.	0 45 13.9	43.4	13.3	41.6	10.1	39.9	6.1	S.	51.9	16.4	44.6	11.2	37.6	3.5	52 29.7
26	15	α Bootis	E.	N.	9 53 44.0	56.9	9.6	22.0	28.4	34.8	41.2	S.	46.0	52.2	58.8	5.2	17.9	30.4	56 43.2
	16		W.	S.	18 19 24.1	37.1	50.0	2.5	9.2	15.8	22.1	N.	25.0	31.3	37.8	44.0	57.0	9.6	22 22.5
	17	α Coronæ Bor.	E.	S.	12 4 23.2	38.5	53.6	9.1	17.2	25.0	32.9	N.	49.9	57.5	5.1	13.3	28.9	44.2	7 59.8
	18		W.	N.	18 47 10.8	26.2	42.0	57.2	5.3	13.0	20.8	S.	39.0	46.9	54.0	2.1	17.6	33.0	50 48.6
	19	β Cygni	E.	S.	16 4 6.5	22.2	37.8	53.2	1.5	9.1	17.2	N.	36.0	44.0	51.6	0.0	15.5	31.2	7 47.1
	20		W.	N.	22 40 7.5	23.5	39.1	55.0	3.0	11.0	19.0	S.	38.0	45.6	54.0	1.6	17.2	32.8	43 48.6
	21	β Lyræ	E.	N.	16 19 ..	..	..	31.0	42.0	53.2	3.8	S.	10.3	21.0	32.2	43.2	..	..	21 ..
	22		W.	S.	21 5 ..	..	..	56.0	7.5	18.5	29.2	N.	35.8	46.0	57.0	8.5	..	..	8 ..
	†23	Lal. 34868	E.	S.	16 59 53.2	9.5	25.2	41.8	57.9	15.0	30.0	N.	33.9	48.9	6.9	23.0	39.5	56.0	64 13.0
	24		W.	N.	20 11 3.5	20.4	37.0	53.1	10.0	27.5	43.0	S.	46.2	1.5	18.7	34.5	50.6	7.0	15 23.0
	25	Lal. 35222	E.	N.	17 7 1.5	17.2	34.0	50.0	6.2	22.0	38.3	S.	44.5	1.7	17.0	34.0	51.0	8.0	11 24.5
	26		W.	S.	20 19 50.9	7.5	24.0	41.5	58.2	14.0	30.5	N.	36.6	53.0	8.3	24.8	41.6	57.8	24 14.0
	27	ε Lyræ	E.	S.	17 14 1.0	16.0	31.0	45.7	0.0	15.7	29.1	N.	27.1	41.0	57.0	11.9	27.0	42.2	17 57.5
	28		W.	N.	20 44 31.0	47.1	1.5	16.9	32.0	47.4	2.0	S.	59.6	13.1	29.0	43.3	58.6	13.0	48 27.1
	29	Lal. 38037	E.	S.	17 40 48.8	1.0	13.6	25.8	38.0	51.1	2.5	N.	51.5	3.1	16.1	28.5	41.0	53.4	44 6.8
	30		W.	N.	21 53 13.0	25.6	37.9	50.2	3.0	16.0	27.1	S.	16.0	27.0	40.4	52.8	5.5	17.5	56 29.8
	31	Anon.	E.	S.	18 1 52.2	10.0	27.4	44.8	1.6	20.0	36.0	N.	45.0	1.6	20.1	37.6	55.5	13.5	6 31.6
	32		W.	N.	21 0 26.0	44.0	2.7	19.9	37.5	56.2	13.0	S.	21.0	37.5	56.0	13.5	31.0	47.0	5 4.5
	33	Lal. 38283a	E.	N.	18 12 10.0	26.0	41.2	57.0	13.0	27.5	43.8	S.	47.0	2.8	18.0	34.0	50.2	6.0	16 23.0
	34		W.	S.	21 32 33.2	49.0	5.5	22.0	38.0	53.0	9.0	N.	12.0	28.0	43.0	59.0	15.0	30.0	36 46.5
	35	Lal. 38283	E.	N.	18 12 31.0	46.6	2.5	18.0	34.4	48.9	5.0	S.	8.0	24.4	39.2	55.5	12.1	28.2	16 44.8
	36		W.	S.	21 32 15.0	32.0	48.0	4.0	20.8	35.5	51.5	N.	55.0	11.0	26.2	42.0	57.5	14.0	36 29.0
	37	Anon.	E.	N.	18 23 33.0	..	56.0	7.8	20.0	31.0	..	S.	..	40.5	51.3	3.2	15.2	..	26 39.0
	38		W.	S.	22 54 19.0	..	42.6	54.5	6.2	17.5	..	N.	..	27.8	39.0	51.0	2.6	..	57 26.1
	39	Lal. 37597	E.	N.	18 35 29.5	55.2	21.8	47.0	14.0	38.5	6.0	S.	55.0	22.0	47.7	16.2	45.2	13.2	42 42.7
	40		W.	S.	20 32 49.0	17.5	46.5	15.0	43.0	9.8	37.1	N.	27.0	54.0	19.0	44.8	11.5	38.0	40 3.5
	41	Anon.	E.	N.	18 59 10.1	37.2	4.0	31.0	59.5	25.4	52.5	S	47.0	16.0	43.9	13.1	44.0	14.0	66 44.0
	42		W.	S.	20 51 14.0	43.8	14.2	44.0	14.0	42.0	10.8	N.	5.6	33.0	59.0	27.0	54.5	21.2	58 48.0

DATE.	CLOCK +AZIMUTH.	CLOCK'S HOURLY RATE.
h.	s.	s.
Aug. 20, 15	+ 36.30	+ 0.017
25, 16	38.29	0.017
26, 17	38.63	+0.017

23. Star unsteady.

LEVEL READINGS. Means. N.	Means. S.	S. — N.	Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED R. Ascension.	OBSERVED N. Declination.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 Decl.	Magnitude.	Observer.	OBJECT.
N.	S.	Div.	″	H. M. S.	s.	H. M. S.	° ′ ″	s.	″			
18.00	16.25	—1.75	—0.40	14 37 43.27	+ 36.28	14 38 19.55	27 43 29.72	+ 6.57	—55.45	..	H.	ε Bootis.
19.10	19.00	0.10										
17.37	16.05	1.32	0.36	15 27 37.80	36.28	15 28 14.08	27 14 12.20	6.13	49.99	..		α Coronæ Bor.
20.15	19.67	0.48										
20.90	18.20	2.70	1.15	19 19 17.35	38.34	19 19 55.69	36 57 10.46	3.45	6.08	..	P.	Lal. 36774.
24.31	21.54	2.77										
21.58	19.16	2.42	0.69	19 9 31.51	38.02	19 10 9.53	38 26 58.67	3.33	— 8.54	10		Lal. 36324.
23.26	22.72	0.54										
24.71	22.72	1.99	1.13	23 9 3.62	38.48	23 9 42.10	37 7 56.45	4.43	+39.82	10		Lal. 45588.
26.05	23.09	2.96										
25.61	23.26	2.35	1.12	22 50 3.03	38.41	22 50 41.44	38 29 49.45	4.18	37.39	8		Lal. 44922.
25.94	23.47	2.47										
25.98	23.75	2.23	1.08	23 51 39.50	38.43	23 52 17.93	38 0 41.19	4.95	+44.62	8		Lal. 47049.
25.81	23.44	2.37										
19.70	18.27	1.43	0.51	14 8 3.52	38.65	14 8 42.17	19 58 57.97	7.00	—60.17	..	H.	α Bootis.
20.80	18.95	1.85										
18.35	16.15	2.20	0.94	15 27 35.52	38.59	15 28 14.11	27 14 13.48	6.15	49.91	..		α Coronæ Bor.
21.50	19.67	1.83										
17.95	16.15	1.80	0.66	19 23 57.46	38.72	19 24 36.18	27 38 56.90	4.25	3.97	..		β Cygni.
23.00	21.35	1.65										
18.30	16.00	2.30	0.98	18 43 49.70	38.71	18 44 28.41	33 11 44.74	3.93	13.96	..		β Lyræ.
22.32	20.15	2.17										
18.42	17.10	1.32	0.91	18 37 38.20	38.80	18 38 17.00	36 24 36.66	3.68	15.79	7		Lal. 34868.
22.31	19.65	2.64										
18.65	17.05	1.60	0.87	18 45 37.60	38.75	18 46 16.35	36 21 58.33	3.64	13.93	7		Lal. 35222.
22.15	19.90	2.25										
18.95	17.15	1.80	0.96	19 1 14.42	38.75	19 1 53.17	35 52 15.31	3.63	—10.17	6		ε Lyræ.
22.39	19.96	2.43										
19.85	18.15	1.70	0.84	19 48 39.40	38.76	19 49 17.16	34 30 25.36	3.60	+ 1.19	8		Lal. 38037.
22.60	20.52	2.08										
20.40	18.70	1.70	0.89	19 33 28.81	38.77	19 34 7.58	36 43 54.95	3.44	— 2.68	10		Anon.
22.35	20.15	2.20										
20.47	19.05	1.42	0.89	19 54 27.92	38.82	19 55 6.74	36 9 36.18	3.47	+ 2.29	10		Lal. 38283 *a*.
22.70	20.17	2.53										
20.47	19.05	1.42	0.89	19 54 30.00	38.82	19 55 8.82	36 10 40.55	3.47	2.29	8		Lal. 38283.
22.70	20.17	2.53										
20.70	19.30	1.40	0.66	20 40 29.16	38.76	20 41 7.92	33 49 18.44	3.64	+12.85	6		Anon.
23.05	21.50	1.55										
21.45	19.25	2.20	1.09	19 37 46.06	38.77	19 38 24.83	37 57 58.21	3.31	— 1.78	8.9		Lal. 37597.
22.42	19.90	2.52										
21.62	19.89	1.73	—1.03	19 58 59.03	+ 38.87	19 59 37.90	38 2 51.27	+ 3.28	+ 3.23	8		Anon.
22.55	19.82	—2.73										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WI G.	F.	E.	D.	C.	B.	
					H. M. s.	s.	s	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M.
Aug. 26	1	(7061)	E.	S.	19 18 33.0	58.5	23.8	49.0	15.0	42.0	6.1	N.	49.9	15.0	43.8	10.5	37.3	5.4	25
	2		W.	N.	21 17 3.2	31.5	59.8	27.1	54.2	23.0	47.9	S.	30.8	54.8	22.5	48.0	13.0	38.0	24
	3	Anon.	E.	S.	20 0 27.8	50.0	11.0	33.5	55.0	19.0	40.0	N.	7.6	29.0	53.8	16.0	39.2	3.0	6
	4		W.	N.	22 18 54.7	18.7	41.9	5.0	28.0	52.5	14.0	S.	43.0	3.5	27.0	49.0	11.0	33.0	24
31	5	α Bootis	E.	N.	9 53 44.3	57.5	9.8	22.6	34.9	..	..	S.	..	..	52.7	5.6	18.2	30.4	56
	6		W.	S.	18 19 24.2	37.4	49.7	2.4	15.6	..	..	N.	..	..	31.8	44.5	57.4	10.2	22
Sept. 1	7	Lal. 37753	E.	S.	18 41 27.8	54.2	21.1	47.5	14.3	42.8	7.9	N.	54.1	20.2	50.8	19.1	48.4	18.2	48
	8		W.	N.	20 34 3.7	33.5	2.4	31.5	0.4	30.7	57.5	S.	44.7	9.6	38.6	4.9	31.4	58.5	41
	9	(6990)	E.	N.	18 58 24.5	46.6	9.1	31.2	52.9	13.8	37.1	S.	9.8	32.9	55.2	18.1	41.7	5.1	64
	10		W.	S.	21 18 36.5	0.0	23.8	47.9	11.1	33.4	56.7	N.	28.7	50.9	11.4	34.6	56.9	19.7	24
	11	(7453)	E.	S.	19 34 11.6	26.5	41.4	56.5	11.4	27.9	41.7	N.	40.5	54.5	11.4	26.2	41.5	57.2	38
	12		W.	N.	22 59 40.1	55.2	12.4	26.8	41.7	58.6	12.9	S.	11.3	25.1	41.9	56.4	11.7	26.4	64
	13	Anon.	E.	N.	19 43 19.6	41.7	3.9	25.6	48.4	9.6	31.4	S.	3.9	27.3	48.9	12.6	35.7	58.8	49
	14		W.	S.	22 4 4.8	28.5	52.3	15.7	38.5	1.2	24.9	N.	56.8	18.3	39.6	2.4	23.7	45.9	10
3	15	α Bootis	E.	S.	9 53 43.8	56.4	8.7	21.0	27.6	34.5	40.9	N.	43.4	49.9	56.0	2.4	15.7	28.9	56
	16		W.	N.	18 19 22.7	35.6	48.5	0.8	7.4	13.5	20.1	S.	23.8	30.0	36.3	42.7	55.6	8.3	22
	17	ζ Cygni	E.	N.	18 2 55.5	13.4	30.4	47.3	56.0	4.8	13.5	S.	41.3	50.2	58.8	7.9	25.2	42.1	7
	18		W.	S.	0 4 37.8	55.3	12.5	30.2	38.8	47.3	56.5	N.	23.6	32.4	41.2	50.4	7.7	23.8	8
	19	(6771)	E.	S.	18 11 56.3	14.9	33.1	51.8	9.8	29.0	46.5	N.	57.6	15.6	35.8	54.5	14.1	32.8	16
	20		W.	N.	20 59 24.0	43.5	2.2	21.4	39.7	0.6	17.8	S.	29.9	46.5	6.8	24.9	43.2	1.2	64
	21	Lal. 37753	E.	N.	18 41 47.8	14.4	41.2	8.6	34.5	2.4	21.7	S.	38.0	57.8	26.8	54.4	24.0	54.4	48
	22		W.	S.	20 34 26.0	56.4	25.6	55.2	23.0	51.7	11.9	N.	27.1	46.7	14.2	41.0	7.2	34.9	41
	23	(6990)	E.	S.	18 58 28.9	50.5	11.9	34.1	55.5	19.0	39.6	N.	6.8	26.7	50.8	13.5	36.6	59.7	64
	24		W.	N.	21 18 39.9	4.4	27.9	50.8	12.4	37.4	58.6	S.	24.7	44.8	8.7	29.5	50.9	13.5	24
	25	Anon.	E.	N.	19 9 16.4	36.5	57.3	18.3	39.0	58.2	18.8	S.	43.7	5.2	25.3	47.0	8.8	30.3	14
	26		W.	S.	21 41 7.2	28.5	50.4	10.8	33.6	53.4	15.2	N.	40.4	1.2	20.3	41.5	2.0	22.4	46
	27	Lal. 41341	E.	S.	19 35 9.1	26.5	43.4	0.2	16.5	35.1	50.9	N.	56.5	12.4	31.2	47.9	5.7	22.5	39
	28		W.	N.	22 37 58.6	16.7	33.4	51.3	8.0	26.7	42.4	S.	48.6	4.0	22.7	38.4	56.3	12.9	42
	29	Anon.	E.	N.	19 43 18.5	40.6	2.9	25.5	46.7	8.4	31.5	S.	3.4	26.0	47.8	11.2	34.5	58.7	49
	30		W.	S.	22 4 3.4	27.3	51.4	14.4	37.5	59.9	23.4	N.	53.8	16.5	37.8	0.5	22.4	44.3	10
	31	Anon.	E.	S.	20 6 12.8	31.2	49.0	6.9	24.4	43.5	59.6	N.	9.2	26.5	45.4	3.8	22.4	40.6	10
	32		W.	N.	22 59 21.0	39.7	58.4	16.5	34.4	54.4	11.5	S.	21.4	37.9	56.5	15.1	32.5	50.4	64
	33	Anon.	E.	N.	20 17 23.4	43.2	4.2	25.4	45.5	5.4	25.5	S.	51.3	12.7	32.4	54.2	15.9	38.2	22
	34		W.	S.	22 49 41.7	3.7	25.5	46.7	8.5	28.3	49.4	N.	14.2	35.0	54.3	15.3	36.4	55.8	55
	35	Lal. 44466	E.	S.	21 9 28.5	47.0	5.6	23.5	41.4	2.0	19.4	N.	31.4	49.8	10.3	28.6	47.5	6.6	14
	36		W.	N.	23 56 19.2	39.2	58.4	17.2	36.3	55.6	13.6	S.	25.4	42.4	3.1	21.1	39.9	50.0	61
	37	(8136)	E.	N.	21 54 35.4	56.2	16.9	37.5	58.6	17.8	39.2	S.	5.0	25.4	46.5	8.1	29.9	51.4	60
	38		W.	S.	0 25 36.4	58.1	20.2	41.8	4.0	23.8	45.6	N.	9.3	30.7	51.0	11.8	32.4	52.8	31
	39	Lal. 46873	E.	S.	22 25 29.8	50.4	9.8	29.3	48.5	9.1	27.3	N.	45.1	3.6	24.4	44.5	5.0	25.8	30
	40		W.	N.	1 2 41.4	1.9	22.1	42.5	2.2	24.4	42.4	S.	0.9	18.2	39.4	58.5	18.0	37.7	7
	41	Lal. 421	E.	S.	23 10 26.0	50.8	16.4	41.0	6.3	32.5	55.9	N.	35.9	0.4	29.5	55.8	22.9	49.9	17
	42		W.	N.	1 11 18.9	46.1	12.9	40.6	6.8	35.4	59.4	S.	38.7	2.3	29.5	54.8	20.6	44.1	18

DATE.	CLOCK +AZIMUTH.	CLOCK'S HOURLY RATE.
h.	s.	s.
Aug. 26, 17	+ 38.69	+0.017
Sept. 1, 21	39.15	.009
3, 20	40.26	.000

Sept. 1. Night hazy.

LEVEL READINGS.			Corr. for Level.	MEAN OF WIRES	Correction in Right Ascension.	OBSERVED		REDUCTION TO 1850.0		Magnitude.	Observer.	OBJECT.
Means.		S.—N.				R.Ascension.	N.Declination.	R. A.	Decl.			
N.	S.	*Div.*	″	H. M. S.	S.	H. M. S.	° ′ ″	S.	″			
21.65	20.37	—1.28	—0.87	20 21 18.60	+ 38.86	20 21 57.46	37 56 52.30	+ 3.29	+ 8.45	7	H.	(7061)
22.62	20.10	2.52										
21.60	20.40	1.20	0.82	21 12 41.00	38.88	21 13 19.88	37 36 3.33	3.49	+ 19.73	7.8		Anon.
23.05	20.70	2.35										
15.34	13.91	1.43	0.77	14 8 3.78	. .	. . . . .	19 58 57.93	. .	— 60.05	..	P.	α Bootis.
16.90	15.10	1.80										
16.05	13.66	2.39	1.12	19 41 25.95	39.14	19 42 5.09	38 2 22.28	3.39	— 2.24	8		Lal. 37753.
17.31	14.95	2.36										
16.27	14.50	1.77	1.10	20 11 32.85	39.26	20 12 12.11	37 34 4.08	3.41	+ 4.79	6		(6990)
18.22	15.30	2.92										
16.37	14.80	1.57	1.17	21 18 56.53	39.29	21 19 35.82	36 0 58.89	3.69	19.47	8		(7453)
18.65	15.24	3.41										
16.36	14.89	1.47	0.84	20 56 43.96	39.22	20 57 23.18	37 33 26.27	3.47	+ 14.77	9.10		Anon.
17.79	15.70	2.09										
15.94	12.27	3.67	1.12	14 8 1.97	40.23	14 8 42.20	19 58 58.13	7.12	— 59.83	..		α Bootis.
15.40	12.96	2.44										
14.20	13.15	1.05	0.58	21 5 48.79	40.27	21 6 29.06	29 36 35.11	4.15	+ 16.26	..		ζ Cygni.
18.55	17.15	1.40										
14.81	13.01	1.80	1.10	19 38 8.07	40.35	19 38 48.42	36 59 44.26	3.55	— 3.28	6		(6771)
17.80	14.90	2.90										
15.62	13.35	2.27	1.14	19 41 24.84	40.30	19 42 5.14	38 2 22.91	3.41	— 2.67	8		Lal. 37753.
17.45	14.85	2.60										
15.79	13.55	2.24	1.20	20 11 31.99	40.32	20 12 12.31	37 34 4.68	3.44	+ 4.31	6		(6990)
18.10	15.25	2.85										
15.90	13.72	2.18	1.22	20 27 59.55	40.34	20 28 39.89	37 20 11.24	3.46	7.95	9.10		Anon.
18.30	15.30	3.00										
16.40	14.25	2.15	1.07	21 8 49.60	40.28	21 9 29.88	36 37 32.88	3.60	16.78	9		Lal. 41341.
18.49	16.09	2.40										
16.10	14.41	1.69	0.91	20 56 42.70	40.35	20 57 23.05	37 33 27.11	3.49	14.22	10		Anon.
18.40	15.80	2.60										
17.05	14.82	2.23	1.16	21 35 10.47	40.30	21 35 50.77	36 51 46.57	3.69	22.08	9		Anon.
18.81	16.10	2.71										
16.92	14.97	1.95	1.17	21 36 20.25	40.34	21 37 0.59	37 19 37.24	3.66	22.31	9		Anon.
18.81	15.80	3.01										
17.90	15.06	2.84	1.32	22 35 22.71	40.26	22 36 2.97	37 0 35.95	4.09	32.71	..		Lal. 44466.
19.21	16.41	2.80										
18.15	15.80	2.35	1.24	23 12 54.74	40.32	22 13 35.06	37 21 13.47	4.47	38.10	5		(8136)
19.40	16.45	2.95										
18.40	16.20	2.20	0.74	23 46 43.77	40.36	23 47 24.13	37 13 27.14	4.81	41.82	10		Lal. 46873.
19.86	16.42	3.44										
18.85	16.35	2.50	—0.76	0 14 17.84	+ 40.37	0 14 58.21	37 54 34.77	+ 5.13	+ 44.26	8.9		Lal. 421.
19.90	16.50	—3.40										

ASSUMED LATITUDE 38° 53′ 38″.80 NORTH.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. S.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
Sept. 10	1	(7453)	E.	S.	19 34 14.6	30.0	44.1	59.5	14.3	29.2	44.3	N.	38.6	54.5	9.1	24.9	39.6	54.0	38 10.7
	2		W.	N.	22 59 42.5	59.2	14.3	29.3	44.2	58.5	14.6	S.	9.2	24.5	39.1	54.3	8.7	23.6	63 38.5
	3	Lal. 41086	E.	S.	20 5 11.3	38.8	6.8	34.2	1.1	27.6	57.5	N.	41.8	12.7	41.5	11.2	42.2	12.2	12 43.7
	4		W.	N.	21 52 24.3	57.5	26.9	57.1	27.7	55.8	26.4	S.	11.3	40.6	5.8	33.7	3.9	30.1	59 58.8
	5	Lal. 42034	E.	N.	20 21 20.5	42.6	8.7	34.3	57.5	21.4	46.8	S.	41.4	6.5	31.5	56.4	25.1	52.6	28 18.4
	6		W.	S.	22 25 16.4	42.1	10.3	37.7	3.6	28.4	53.4	N.	48.8	13.2	37.6	0.8	26.1	52.2	33 14.5
	7	Lal. 43630	E.	S.	20 37 52.1	8.6	24.9	40.5	58.5	13.0	30.4	N.	29.8	48.3	3.2	21.3	38.5	55.3	42 12.1
	8		W.	N.	23 44 6.6	23.8	42.3	57.6	15.8	31.5	48.5	S.	46.4	5.3	20.4	37.5	54.4	9.3	48 26.9
	9	Anon.	E.	N.	21 10 34.2	51.0	10.8	30.6	49.6	6.5	25.6	S.	52.8	11.5	29.7	48.6	9.8	31.1	15 48.5
	10		W.	S.	23 54 51.4	9.3	30.4	50.1	9.2	28.1	47.4	N.	14.6	32.6	51.3	11.2	28.5	49.1	60 5.9
	†11	Anon.	E.	N.	22 35 57.6	17.4	40.9	2.0	22.4	42.1	2.0	S.	41.7	2.8	24.4	46.0	8.3	33.4	41 53.8
	†12		W.	S.	1 1 47.5	7.4	33.5	55.3	17.7	37.9	59.3	N.	35.0	57.6	19.9	40.8	2.4	24.8	7 43.4
13	13	*a* Bootis	E.	N.	9 53 47.5	0.4	12.3	25.2	31.5	38.2	44.5	S.	46.1	52.7	59.5	5.0	18.3	31.4	56 43.5
	14		W.	S.	18 19 27.8	40.5	53.3	5.8	12.1	18.9	25.4	N.	26.4	32.9	39.7	45.4	58.3	11.2	22 23.7
	15	(6667)	E.	N.	17 35 24.5	39.6	54.8	10.8	25.5	39.6	55.3	S.	55.6	10.4	25.5	40.2	56.4	13.7	39 27.5
	16		W.	S.	21 0 44.4	59.5	15.4	32.2	47.3	2.2	17.2	N.	13.7	29.5	43.6	58.8	14.3	30.1	4 44.5
	17	Lal. 36478	E.	S.	17 50 42.3	0.8	20.5	38.6	58.5	17.4	37.5	N.	57.8	18.9	37.3	57.5	17.1	37.4	55 57.7
	18		W.	N.	20 30 11.5	31.7	51.4	11.8	31.5	50.2	10.9	S.	31.2	51.7	9.8	29.3	48.1	7.2	35 26.6
	19	(7006)	E.	N.	18 40 32.3	48.1	6.6	24.4	41.3	57.2	14.1	S.	22.6	39.5	57.3	14.4	32.3	50.8	45 7.4
	20		W.	S.	21 41 55.5	11.4	30.3	48.5	5.9	22.4	40.2	N.	49.3	6.2	22.5	39.4	56.2	14.8	46 30.7
	21	(6849)	E.	S.	18 51 26.3	53.5	20.2	47.1	15.4	41.5	10.0	N.	7.5	37.9	5.4	35.9	6.0	35.5	59 7.6
	22		W.	N.	20 40 31.5	3.9	33.8	3.8	33.6	1.4	31.5	S.	30.7	59.6	25.4	53.4	20.9	47.2	48 14.8
	23	Lal. 40494	E.	N.	19 12 7.2	22.4	40.5	58.6	14.6	30.5	46.5	S.	51.6	7.9	24.6	41.3	59.0	17.4	16 33.5
	24		W.	S.	22 19 47.5	3.3	21.6	39.5	55.4	12.2	28.6	N.	35.6	51.4	7.9	24.5	41.4	58.5	24 14.1
	25	Lal. 39885	E.	S.	19 24 17.7	40.5	4.1	28.3	52.1	14.6	39.5	N.	21.3	47.4	11.2	36.7	2.8	27.4	30 53.8
	26		W.	N.	21 31 17.9	43.2	8.9	34.4	59.1	23.5	49.5	S.	30.2	55.4	18.4	42.2	5.9	29.3	37 53.6
	27	Anon.	E.	S.	19 43 25.9	47.4	8.6	30.4	52.2	12.8	35.5	N.	7.7	31.5	52.9	15.3	37.4	0.8	49 24.2
	28		W.	N.	22 4 9.3	33.4	56.3	18.9	41.5	3.6	26.6	S.	58.4	21.2	40.8	2.9	24.4	45.1	10 7.0
	29	Anon.	E.	S.	20 6 15.4	33.5	51.1	8.2	26.3	43.5	2.3	N.	16.5	35.7	52.3	10.8	29.1	47.6	11 6.3
	30		W.	N.	22 59 22.4	41.6	59.3	18.5	36.4	53.7	12.3	S.	27.6	45.5	1.8	20.5	38.1	55.3	64 13.1
	31	Anon.	E.	N.	20 14 36.3	55.1	15.6	35.5	54.6	13.4	33.3	S.	52.2	11.8	31.4	51.6	12.4	33.9	19 53.4
	32		W.	S.	22 51 12.4	32.5	53.4	14.6	35.2	53.5	14.2	N.	33.4	52.8	11.7	31.3	51.1	11.8	57 30.7
	33	Anon.	E.	N.	21 10 42.6	59.8	19.7	39.3	57.5	16.1	34.3	S.	50.4	8.9	28.5	47.3	7.1	27.8	15 47.1
	34		W.	S.	23 54 59.3	16.3	38.6	59.2	17.8	35.8	55.4	N.	11.5	30.3	48.2	6.5	25.7	46.3	60 3.4
	35	(8136)	E.	S.	21 54 42.3	3.6	22.4	43.2	2.3	22.9	43.4	N.	9.6	31.5	50.7	12.4	33.5	54.6	60 16.4
	36		W.	N.	0 25 41.4	3.1	24.9	45.6	7.0	26.5	48.4	S.	13.7	35.2	54.8	15.3	35.3	54.8	31 14.9
14	37	ζ Cygni	E.	S.	18 2 59.1	15.8	33.4	49.5	58.9	7.2	16.1	N.	46.6	55.4	3.8	12.5	29.6	46.7	7 4.5
	38		W.	N.	0 4 43.2	0.5	18.3	35.4	44.0	52.7	0.7	S.	29.4	37.3	46.1	55.3	11.9	29.4	8 46.2
	39	Lal. 38175	E.	S.	18 42 35.5	59.9	23.2	45.4	9.1	31.4	56.5	N.	32.5	58.6	21.4	46.2	10.2	35.3	49 0.5
	40		W.	N.	20 54 37.5	1.3	26.9	51.4	15.1	38.6	5.9	S.	40.4	5.5	27.4	51.5	13.8	35.4	60 58.5
	41	Anon.	E.	S.	19 15 16.7	32.1	48.5	4.8	20.3	35.4	53.1	N.	58.3	16.4	31.2	48.4	4.9	21.2	19 38.5
	42		W.	N.	22 16 41.2	57.3	13.9	29.4	46.5	1.8	20.0	S.	24.4	41.5	56.8	12.6	28.4	44.2	21 0.6

DATE.	CLOCK +AZIMUTH.	CLOCK'S HOURLY RATE.
	h.	s.	s.
Sept. 10,	20	+ 39.04	— 0.007
13,	20	36.21	.037
14.	20	35.38	.023

† 11. Very cloudy

No. for ref.	LEVEL READINGS. Means. N.	Means. S.	S. — N.	Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED R.Ascension.	OBSERVED N.Declination.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 Decl.	Magnitude.	Observer.	OBJECT.
	N.	S.	Div.	"	H. M. S.	s.	H. M. S.	° ′ ″	s.	″			
1	23.90	21.97	—1.93	—0.91	21 18 56.71	+ 39.03	21 19 35.74	36 1 0.24	+ 3.75	+17.37	..	P.	(7453)
2	26.37	24.40	1.97										
3	23.95	22.40	1.55	0.79	21 2 34.37	39.06	21 3 13.43	38 7 8.97	3.53	13.97	..		Lal. 41086.
4	25.60	23.80	1.80										
5	24.85	22.50	2.35	1.01	21 26 47.49	38.98	21 27 26.47	37 51 30.54	3.63	18.85	..		Lal. 42034.
6	26.10	24.10	2.00										
7	24.90	22.80	2.10	0.86	22 13 9.03	38.98	22 13 48.01	36 32 18.95	3.97	27.34	7.8		Lal. 43630.
8	26.20	24.65	1.55										
9	25.17	23.45	1.72	0.85	22 35 19.97	39.03	22 35 59.00	37 4 3.40	4.08	30.96	11		Anon.
10	26.20	24.30	1.90										
11	25.85	24.45	1.40	0.79	23 51 50.69	39.07	23 52 29.76	37 27 30.19	4.79	+40.52	..		Anon.
12	25.75	23.75	—2.00										
13	23.45	23.65	+0.20	—0.10	14 8 5.62	36.44	14 8 42.06	19 58 56.95	7.24	—58.94	..		α Bootis.
14	23.00	22.90	—0.10										
15	20.60	21.55	+0.95	+0.01	19 20 5.40	36.25	19 20 41.65	36 1 18.30	3.88	— 8.70	..		(6667)
16	24.85	25.70	0.85										
17	22.35	22.80	+0.45	—0.11	19 13 4.36	36.34	19 13 40.70	37 10 27.90	3.81	—10.40	..		Lal. 36478.
18	25.45	24.50	—0.95										
19	23.40	23.75	+0.35	0.10	20 13 31.50	36.33	20 14 7.83	36 39 42.76	3.68	+ 2.95	..		(7006)
20	26.15	25.35	—0.80										
21	23.90	23.70	0.20	—0.38	19 49 50.04	36.37	19 50 26.41	38 5 30.03	3.58	— 2.40	7		(6849)
22	26.00	24.60	—1.40										
23	23.20	24.95	+1.75	+0.08	20 48 10.61	36.36	20 48 46.97	36 30 7.33	3.68	+10.44	8		Lal. 40494.
24	26.65	25.81	—0.84										
25	24.40	24.15	0.25	—0.29	20 31 5.32	36.27	20 31 41.59	37 48 25.34	3.56	6.71	..		Lal. 39885.
26	26.15	25.15	1.00										
27	24.40	22.45	1.95	1.23	20 56 46.86	36.32	20 57 23.18	37 33 28.09	3.60	12.16	11		Anon.
28	29.05	25.70	3.35										
29	24.75	24.60	0.15	0.14	21 35 14.45	36.17	21 35 50.62	36 51 49.18	3.77	19.84	9		Anon.
30	26.95	26.50	0.45										
31	25.05	24.50	0.55	0.26	21 36 3.18	36.15	21 36 39.33	37 12 54.50	3.74	19.96	..		Anon.
32	26.95	26.40	0.55										
33	25.85	25.00	0.85	0.39	22 35 22.92	36.11	22 35 59.03	37 4 5.23	4.08	30.13	11		Anon.
34	27.90	27.05	0.85										
35	26.00	25.80	0.20	0.50	23 12 58.92	36.16	23 13 35.08	37 21 15.85	4.41	35.42	5.6		(8136)
36	28.25	27.30	0.95										
37	27.80	27.50	0.30	0.01	21 5 53.20	35.35	21 6 28.55	29 36 31.57	4.25	+14.24	..		2 Cygni.
38	30.55	30.55	0.00										
39	28.15	27.45	0.70	0.32	19 51 48.37	35.37	19 52 23.74	37 43 10.43	3.48	— 2.06	8		Lal. 38175.
40	29.20	28.55	0.65										
41	28.20	28.15	0.05	—0.12	20 48 8.87	+ 35.39	20 48 44.26	36 39 43.55	+ 3.69	+10.20	10		Anon.
42	29.60	29.15	—0.45										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					h. m. s.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	s. m.
Sept. 14	†1	Lal. 39884	E.	N.	19 22 51.0	9.3	34.8	59.5	21.6	45.4	9.8	S.	44.1	9.2	31.7	58.5	22.8	49.4	29 11.3
	†2		W.	S.	21 32 58.6	23.8	50.2	14.9	39.1	4.8	28.4	N.	59.3	22.6	44.5	8.9	32.4	58.5	39 19.4
	3	Anon.	E.	S.	19 34 5.6	20.3	36.5	51.2	6.3	20.5	37.4	N.	39.5	55.8	10.7	25.5	41.3	55.4	38 12.2
	4		W.	N.	22 58 46.5	3.2	17.9	33.5	49.1	3.8	20.3	S.	21.5	38.0	52.1	7.3	22.4	38.4	62 53.3
	5	Anon.	E.	S.	20 4 9.2	24.5	40.8	57.2	13.6	28.4	45.9	N.	51.3	9.8	24.4	42.0	58.4	13.8	8 31.1
	6		W.	N.	23 16 30.4	46.4	3.2	19.4	35.3	51.7	10.2	S.	15.6	32.4	47.5	4.0	19.5	34.9	20 51.5
	7	Anon.	E.	N.	20 14 37.3	55.7	17.2	36.5	55.6	15.3	34.1	S.	52.9	12.5	31.4	52.6	12.4	35.5	19 54.6
	8		W.	S.	22 52 16.4	37.2	58.5	20.1	39.8	58.5	19.2	N.	34.3	54.5	12.3	32.2	52.0	12.8	57 31.3
	9	Lal. 42034	E.	S.	20 21 27.5	51.8	16.4	40.7	5.3	29.5	55.9	N.	38.8	6.9	31.3	57.2	23.3	48.5	28 17.2
	10		W.	N.	22 25 26.5	52.7	19.3	45.8	11.5	35.5	3.8	S.	45.2	11.9	35.4	0.9	24.6	48.1	32 13.3
	11	Lal. 44642	E.	S.	21 6 51.3	8.4	24.2	40.5	57.6	14.0	32.4	N.	41.6	0.4	16.4	33.8	51.3	8.9	11 26.4
	12		W.	N.	0 9 54.2	11.3	28.9	46.3	4.0	19.6	38.9	S.	48.1	6.1	21.5	38.9	55.3	11.4	14 29.7
	13	Lal. 45078	E.	N.	21 21 27.4	43.5	2.1	19.4	36.2	52.9	9.8	S.	17.8	35.2	51.6	9.4	27.2	46.5	26 2.6
	14		W.	S.	0 22 47.8	3.1	23.4	41.6	58.4	15.0	32.5	N.	40.7	58.2	13.6	31.4	48.8	6.9	27 22.3
	15	Anon.	E.	S.	21 59 35.1	53.6	11.4	29.3	47.3	5.8	24.5	N.	39.3	0.1	17.4	36.4	55.5	13.9	64 33.4
	16		W.	N.	0 48 43.9	3.7	21.6	40.4	59.3	17.1	36.9	S.	51.4	11.0	28.3	46.6	4.3	22.7	53 41.1
	17	Anon.	E.	S.	22 36 6.7	27.5	48.3	9.4	29.6	50.4	13.2	N.	39.5	3.6	23.7	45.5	8.0	29.9	41 52.3
	18		W.	N.	1 1 56.9	19.8	40.9	2.8	25.9	45.7	10.3	S.	35.5	58.4	18.9	39.6	0.2	21.2	7 42.4
15	19	Lal. 38859	E.	S.	19 16 27.0	59.0	29.5	1.4	33.3	4.0	39.3	N.	54.5	33.7	5.0	42.2	17.7	53.0	25 32.0
	20		W.	N.	20 49 2.3	39.3	15.8	51.5	27.5	1.0	38.5	S.	56.5	32.0	3.3	35.2	6.5	37.7	58 9.5
	21	Lal. 39934	E.	N.	19 34 45.4	10.5	40.5	8.7	37.6	4.5	32.0	S.	29.0	58.0	26.8	57.0	27.6	1.0	42 31.0
	22		W.	S.	21 22 11.8	40.5	14.0	46.1	16.0	45.0	15.0	N.	10.0	38.0	5.2	32.4	0.8	31.0	29 56.5
	23	Lal. 39934 *a*	E.	N.	19 34 53.0	17.5	47.2	17.0	45.5	11.0	40.0	S.	36.8	5.8	35.0	5.3	36.0	9.0	42 39.4
	24		W.	S.	21 22 3.0	32.0	5.8	37.2	7.0	36.0	6.3	N.	1.5	30.0	57.5	24.0	52.5	23.3	29 48.0
	25	Lal. 42546	E.	S.	19 54 5.0	20.0	34.2	49.0	3.3	17.0	33.7	N.	34.0	50.8	5.1	20.0	35.4	50.3	58 6.2
	26		W.	N.	23 24 16.0	31.0	46.2	1.2	16.0	30.2	46.8	S.	47.5	3.0	17.6	32.0	46.8	1.5	28 15.9
	27	Lal. 41627	E.	N.	20 17 2.2	27.5	56.5	24.0	51.3	17.6	45.5	S.	35.8	3.8	32.4	0.6	31.2	3.2	24 32.0
	28		W.	S.	22 8 2.6	31.0	2.5	33.0	1.0	29.0	58.2	N.	48.8	16.0	43.4	9.0	37.3	6.7	15 31.5
	29	Lal. 41419	E.	S.	20 31 6.5	47.0	27.1	8.2	50.3	29.4	17.0	N.	23.2	17.5	5.0	56.8	48.0	42.2	43 40.0
	30		W.	N.	21 38 28.0	25.0	18.8	11.0	2.0	49.6	43.5	S.	49.2	37.0	16.0	58.5	39.0	18.0	50 59.0
	31	Lal. 43751	E.	N.	21 9 45.0	6.8	32.5	56.5	20.0	43.0	7.1	S.	44.0	9.0	32.5	58.5	24.5	52.0	16 15.8
	32		W.	S.	23 16 57.7	22.6	49.2	16.2	41.0	6.0	30.8	N.	7.2	31.0	54.5	18.0	43.0	9.0	23 31.0
16	33	Lal. 41269	E.	N.	18 1 49.0	5.5	13.7	22.8	31.5	40.0	48.2	S.	40.0	48.2	56.1	5.2	14.4	22.8	4 39.3
	34		W.	S.	0 9 34.8	51.9	0.0	9.0	17.8	26.0	34.2	N.	26.0	34.0	42.5	51.2	0.0	8.2	12 25.0
	35	Anon.	E.	S.	18 12 37.7	53.0	8.5	23.1	39.3	..	..	N.	..	..	43.0	59.0	15.0	30.0	16 46.3
	36		W.	N.	21 32 21.0	37.0	53.0	8.5	24.0	..	..	S.	..	..	29.0	45.0	59.0	15.0	36 30.2
	37	(6969)	E.	S.	18 28 35.4	51.5	6.8	22.0	38.0	53.3	10.0	N.	13.2	29.1	44.8	1.0	17.0	33.4	32 50.0
	38		W.	N.	21 44 0.0	16.0	32.0	48.0	4.4	20.0	36.5	S.	39.2	56.0	11.1	27.5	43.0	58.0	48 14.0
	39	Lal. 40277	E.	N.	18 41 54.0	6.0	20.0	33.3	46.0	58.8	12.0	S.	6.5	19.2	32.0	45.0	58.0	13.2	45 25.0
	40		W.	S.	22 39 51.5	4.0	18.5	32.0	45.0	58.0	11.0	N.	4.9	18.0	30.9	43.2	56.0	10.5	43 22.8
	41	Anon.	E.	S.	18 52 26.5	49.0	11.2	33.5	56.0	18.0	43.2	N.	15.2	39.8	2.0	26.2	50.2	14.5	58 39.3
	42		W.	N.	21 5 46.4	11.0	35.0	59.1	23.3	46.2	11.0	S.	43.2	7.2	29.4	52.0	14.8	37.0	12 0.0

DATE.	CLOCK + AZIMUTH.	CLOCK'S HOURLY RATE.
	h.	*s.*	*s.*
Sept. 14,	20	+ 35.38	— 0.023
15,	20	35.08	.011
16,	20	24.86	.000

1. Very faint.
Sept. 15. Bad night. Stars dim and hazy.

LEVEL READINGS. Means. N.	LEVEL READINGS. Means. S.	LEVEL READINGS. S.—N.	Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED R. Ascension.	OBSERVED N. Declination.	REDUCTION TO 1853.0 R. A.	REDUCTION TO 1853.0 Decl.	Magnitude.	Observer.	OBJECT.
N.	S.	Div.	"	H. M. S.	s.	H. M. S.	° ′ ″	s.	″			
28.00	28.40	+0.40	+1.18	20 31 5.14	+ 35.05	20 31 40.19	37 45 10.72	+ 3.59	+ 6.51	..	P.	Lal. 39884.
27.35	30.65	3.30										
27.60	28.95	+1.35	−0.21	21 18 29.48	35.56	21 19 5.04	36 2 22.48	3.79	16.40	..		Anon.
29.95	28.45	−1.50										
28.80	28.25	0.55	−0.28	21 42 30.44	35.35	21 43 5.79	36 22 45.16	3.85	20.96	9		Anon.
30.15	29.50	0.65										
28.85	28.45	−0.40	+1.53	21 36 4.76	35.10	21 36 39.86	37 12 53.78	3.75	19.72	9		Anon.
28.70	30.60	+2.90										
28.80	28.65	−0.15	−0.14	21 26 50.88	35.40	21 27 26.28	37 51 31.60	3.67	17.92	..		Lal. 42034.
29.75	29.30	0.45										
29.15	28.65	0.50	0.25	22 40 40.07	35.33	22 41 15.40	36 37 12.52	4.16	30.74	6.7		Lal. 44642.
30.85	30.30	0.55										
28.95	28.91	0.04	−0.12	22 54 25.20	35.36	22 55 0.56	36 39 48.34	4.26	32.74	9.10		Lal. 45078.
30.65	30.15	−0.50										
27.65	30.90	+3.25	+0.82	22 56 38.26	35.72	22 57 13.98	38 5 39.54	4.19	33.13	8		Anon.
29.95	30.20	+0.25										
29.65	29.40	−0.25	−0.07	23 51 54.50	35.28	23 52 29.78	37 27 31.14	4.76	39.54	7		Anon.
30.00	29.90	−0.10										
25.21	27.29	+2.08	+0.89	20 7 17.42	35.13	20 7 52.55	38 19 15.91	3.37	2.48	7.8	H.	Lal. 38859.
27.27	29.02	1.75										
25.82	27.85	2.03	0.89	20 32 21.14	35.10	20 32 56.24	38 6 59.29	3.47	6.51	8		Lal. 39934.
27.90	29.69	1.79										
25.82	27.85	2.03	0.89	20 32 20.80	35.10	20 32 55.90	38 7 15.68	3.47	6.51	10		Lal. 39934, *a*.
27.90	29.69	1.79										
25.99	28.37	2.38	0.96	21 41 10.56	35.09	21 41 45.65	35 52 51.38	3.89	20.47	6		Lal. 42546.
29.10	31.00	1.90										
26.45	28.97	2.52	1.08	21 16 16.92	35.13	21 16 52.05	38 3 51.83	3.63	15.60	8		Lal. 41627.
28.19	30.26	2.07										
26.65	29.10	2.45	1.01	21 11 3.56	35.19	21 11 38.75	38 34 51.78	3.57	14.52	7		Lal. 41419.
28.05	29.91	1.86										
27.20	29.75	2.55	1.05	22 16 37.30	35.13	22 17 12.43	37 48 12.85	3.92	26.69	6		Lal. 43751.
29.00	31.00	2.00										
22.10	23.95	1.85	1.05	21 7 7.00	34.82	21 7 41.82	29 16 45.37	4.30	+14.23	5		Lal. 41269.
24.95	28.30	3.35										
21.85	24.60	2.75	1.07	19 54 33.83	34.89	19 55 8.72	36 10 44.05	3.81	— 1.63	7		Lal. 38283
24.72	26.80	2.08										
22.10	24.67	2.57	1.01	20 8 24.67	34.91	20 8 59.58	36 17 50.38	3.77	+ 1.38	7.8		(6969)
24.90	26.80	1.90										
22.12	25.17	3.05	1.12	20 42 38.65	34.92	20 43 13.57	35 0 29.82	3.86	+ 8.74	7		Lal. 40277.
25.05	27.12	2.07										
22.40	25.40	3.00	+1.16	20 2 12.86	+ 34.97	20 2 47.83	37 41 44.96	+ 3.66	— 0.16	9.10		Anon.
24.51	26.50	+1.99										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES G.	F.	E.	D.	C.	B.	A.
					H. M. s.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
Sept. 16	1	Anon.	E.	S.	18 52 41.0	4.0	26.5	49.	12.0	34.0	58.3	N.	31.0	56.0	18.5	42.8	7.0	30.5	58 55.5
	2		W.	N.	21 5 35.0	0.5	24.6	48.5	12.2	35.5	0.5	S.	33.0	58.0	19.0	42.4	5.2	26.9	11 50.3
	3	Lal. 40494	E.	S.	19 12 9.2	25.8	42.0	58.0	14.5	30.3	47.2	N.	53.3	10.7	26.5	43.5	0.5	16.8	16 34.7
	4		W.	N.	22 19 50.0	7.2	24.0	40.6	57.6	13.2	30.8	S.	36.9	54.0	9.0	26.0	42.3	58.3	24 15.0
	5	Lal. 42315	E.	N.	19 19 17.0	28.4	41.0	52.5	4.0	15.2	27.0	S.	15.2	27.0	38.4	50.0	1.7	15.0	22 26.0
	6		W.	S.	23 45 41.5	52.3	5.2	17.2	29.0	40.5	52.0	N.	40.0	51.8	3.0	14.2	26.2	38.4	48 50.0
	7	(7001)	E.	N.	19 30 52.8	27.5	8.7	49.0	28.0	6.0	47.8	S.	46.5	31.0	16.0	1.8	52.0	45.5	42 34.3
	8		W.	S.	20 43 9.5	58.5	50.7	41.4	26.7	11.2	56.8	N.	55.1	35.4	14.8	54.3	33.1	14.9	54 50.0
	9	Lal. 42765	E.	S.	19 54 0.0	14.0	27.5	40.5	54.5	8.0	..	N.	..	32.0	45.0	59.0	13.0	27.0	57 41.2
	10		W.	N.	23 38 55.6	10.0	23.7	37.8	52.0	5.0	..	S.	..	29.0	42.0	56.0	9.8	23.0	42 37.0
	11	Lal. 41624	E.	N.	20 14 38.2	2.8	30.0	57.0	22.8	48.0	14.1	S.	6.2	34.0	1.0	28.5	57.1	28.0	21 55.0
	12		W.	S.	22 10 23.3	50.0	21.0	50.8	18.1	44.6	12.0	N.	4.7	31.3	56.9	22.2	48.	17.0	17 41.0
	13	Lal. 44195	E.	S.	20 24 53.0	6.5	18.8	31.0	44.0	55.8	9.0	N.	0.4	13.5	25.8	38.5	51.2	4.0	28 17.3
	14		W.	N.	0 30 3.6	17.0	30.0	42.2	55.0	7.5	21.0	S.	11.5	24.7	37.0	50.0	2.0	14.5	32 27.8
17	†15	α Bootis	E.	S	9 53 48.6	1.0	13.6	26.8	33.0	39.6	45.5	N.	49.2	55.6	2.2	8.0	20.5	33.5	56 46.1
	16		W.	N.	18 19 21.6	41.3	53.9	6.8	13.0	19.5	25.6	S.	29.8	35.9	42.3	48.5	1.2	13.9	22 26.6
29	17	Anon.	E.	N.	18 52 23.9	45.5	10 0	33.9	56.5	18.3	41.4	S.	19.9	43.5	6.2	30.7	55.4	21.4	58 44.5
	18		W.	S.	21 5 41.4	3 6	29.8	54.7	19.4	41.4	5.8	N.	44.5	7.6	29.5	51.8	15.0	40.0	12 1.0
Oct. 1	19	b^3 Cygni	E.	S.	18 29 24.9	41.4	56.3	12.4	28.6	43.5	0.6	N.	2.9	19.7	35.4	52.6	8.0	24.2	33 41.5
	20		W.	N.	21 42 52.2	9.0	24.5	40.9	57.5	12.4	29.2	S.	33.1	49.6	5.3	21.2	36.7	52.4	47 8.0
	21	Anon.	E.	S.	18 52 43.7	6.9	26.6	51.6	14.4	36.9	1.0	N.	32.9	56.7	19.5	44.6	8.0	32.6	58 57.8
	22		W.	N.	20 5 34.5	59.3	24.4	47.6	11.7	33.9	59.6	S.	32.2	55.7	17.8	40.4	3.3	25.4	11 48.5
	23	(7061)	E.	S.	19 18 40.4	6.9	32.1	58.4	22.2	46.6	13.7	N.	56.4	24.6	50.2	18.2	44.4	11.8	25 40.7
	24		W.	N.	21 17 3.4	31.3	59.5	27.6	55.1	20.4	49.1	S.	32.6	0.1	24.2	49.3	11.5	38.6	24 4.1
	25	Anon.	E.	N.	19 31 23.6	48.3	16.3	42.5	9.0	33.4	0.4	S.	56.8	24.6	51.5	19.9	49.6	21.7	38 49.3
	26		W.	S.	21 25 2.3	30.1	2.8	32.5	0.2	27.0	54.2	N.	50.4	17.6	41.7	8.7	35.5	3.6	32 28.9
4	27	ζ Cygni	E.	S.	18 3 5.3	22.1	39.4	56.6	5.2	13.5	22.0	N.	47.8	56.4	4.7	13.9	31.1	48.6	7 6.1
	28		W.	N.	0 4 45.7	2.6	20.4	37.3	46.3	55.2	2.9	S.	29.9	38.2	46.6	55.4	12.2	29.5	8 46.6
	29	b^3 Cygni	E.	N.	18 29 23.6	38.4	55.5	12.0	27.6	43.2	58.6	S.	7.1	22.6	38.9	54.5	11.4	28.4	33 44.6
	30		W.	S.	21 42 51.4	6.8	24.4	41.3	57.4	13.3	29.5	N.	36.7	52.4	7.9	22.5	38.4	57.3	47 11.2
	31	Lal. 38175	E.	S.	18 42 42.1	5.8	29.3	50.7	15.6	37.5	1.2	N.	35.1	59.7	23.1	46.6	10.4	35.0	48 59.5
	32		W.	N.	20 54 40.4	4.0	30.3	53.6	18.4	39.9	5.2	S.	39.5	4.0	26.3	49.5	12.3	34.6	60 58.5
	33	(7061)	E.	N.	19 18 37.8	1.4	28.7	55.4	20.2	44.6	11.0	S.	1.3	27.9	54.2	21.5	48.6	19.4	25 45.8
	34		W.	S.	21 17 2.0	27.9	58.3	27.3	54.1	20.7	46.8	N	36.4	2.0	26.4	52.3	18.0	44.5	24 7.9
	35	Anon.	E.	S.	19 31 25.9	52.0	19.4	45.1	11.4	37.3	5.0	N.	54.5	23.3	48.6	17.7	45.6	15.7	38 44.5
	36		W.	N.	21 25 7.3	38.5	5.0	34.2	2.7	29.8	58.5	S.	49.6	16.5	42.0	8.1	34.4	0.6	32 26.3
	37	τ Cygni	E.	S.	19 51 6.6	28.2	47.5	7.9	29.1	48.8	9.3	N.	33.4	55.2	15.1	36.6	57.8	20.0	56 41.5
	38		W.	N.	22 19 40.6	3.4	23.5	45.4	6.9	27.5	49.6	S.	12.6	34.4	54.4	14.3	34.4	55.4	25 15.5
	39	Anon.	E.	N.	20 4 12.3	27.4	43.4	0.5	16.1	32.6	48.5	S.	55.0	11.6	27.6	43.5	0.4	18.5	8 34.3
	40		W.	S.	23 16 30.6	46.2	3.5	21.4	36.4	52.6	9.3	N.	17.3	33.3	48.5	4.0	20.8	37.7	20 53.5
	41	Lal. 42507	E.	S.	20 12 58.3	16.6	34.5	52.3	10.7	28.1	46.5	N.	0.6	19.6	37.4	56.8	14.6	34.1	17 53.7
	42		W.	N.	23 1 54.1	13.8	32.6	50.4	9.8	27.6	46.5	S.	0.1	19.1	36.5	55.4	13.6	30.5	6 48.6

DATE.	CLOCK + AZIMUTH.	CLOCK'S HOURLY RATE.
	h. s.	s.
Sept. 16, 20	+ 34.86	0.000
Oct. 1, 20	34.20	.000
4, 22	33.02	—0.006

October 1. Misty night. Stars faint.
15. Mic. G. Tel. S., recorded 39s.0.

LEVEL READINGS.			Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED		REDUCTION TO 1850 0		Magnitude.	Observer.	OBJECT.
Means.		S.—N				R. Ascension.	N Declination.	R. A.	Decl			
N.	S.	Div.	″	H. M. S.	S.	H. M. S.	° ′ ″	S.	″			
22.40	25.40	+3.00	+1.16	20 2 15.63	+ 34.97	20 2 50.60	37 42 13.28	+ 3.66	— 0.16	..	H.	Anon.
24.51	26.50	1.99										
22.52	26.19	3.67	1.28	20 48 12.00	34.99	20 48 46.99	36 30 7.80	3.73	+ 9.76	8.9		Lal. 40494.
25.10	26.92	1.82										
23.07	25.90	2.83	1.31	21 34 3.56	34.85	21 34 38.41	33 59 25.29	4.01	18.99	7		Lal. 42315.
24.95	28.02	3.07										
23.45	25.75	2.30	1.18	20 12 51.40	34.77	20 13 26.17	38 32 10.48	3.56	2.08	7		(7001)
23.84	26.60	2.76										
23.40	26.32	2.92	1.24	21 48 18.38	34.88	21 48 53.26	35 25 56.74	3.96	21.53	8		Lal. 42765.
25.15	27.70	2.55										
23.67	26.35	2.68	1.11	21 16 9.45	34.95	21 16 44.40	37 59 29.66	3.65	15.33	7		Lal. 41624.
24.85	27.00	2.15										
23.75	26.37	2.62	1.18	22 28 40.45	34.85	22 29 15.30	34 46 46.77	4.19	+28.33	7		Lal. 44195.
25.25	28.00	2.75										
23.72	25.06	1.34	+0.37	14 8 7.51	. .	. . .	19 58 57.88	. .	−58.51	..	P.	α Bootis.
22.20	22.45	+0.25										
27.50	24.95	−2.55	−1.20	20 2 12.74	. .	. . .	37 41 46.93	. .	1.81	..		Anon.
29.60	27.05	2.55										
20.30	20.85	+0.55	0.07	20 8 16.57	34.29	20 8 50.86	36 20 58.64	4.08	0.30	7		b^3 Cygni.
23.75	22.95	−0.80										
21.07	21.10	+0.03	0.24	19 32 16.09	34.42	19 32 50.51	38 32 15.27	4.29	— 7.76	..		Anon.
23.35	22.30	−1.05										
21.90	21.55	0.35	0.30	20 21 22.66	34.30	20 21 56.96	37 56 58.92	3.92	+ 1.84	6.7		(7061)
23.55	22.40	−1.15										
22.00	22.10	+0.10	−0.22	20 31 55.80	34.34	20 32 30.14	38 1 24.32	3.90	3.92	11		Anon.
23.55	22.51	−1.04										
25.28	25.45	+0.17	+0.74	21 5 55.77	32.99	21 6 28.76	29 36 40.16	4.54	+1.28	..		ζ Cygni.
30.45	31.90	1.45										
25.50	26.05	0.55	0.19	20 8 17.75	33.05	20 8 50.80	36 20 58.41	4.15	— 0.49	6.7		b^3 Cygni.
30.25	30.50	0.25										
25.75	26.45	0.70	0.19	19 51 50.29	33.09	19 52 23.38	37 43 13.98	4.10	— 4.29	..		Lal. 38175.
29.40	29.60	0.20										
26.45	27.30	0.85	0.37	20 21 23.70	33.05	20 21 56.75	37 56 59.31	3.99	+ 1.59	7.8		(7061)
29.55	30.25	0.70										
26.60	27.75	1.15	0.38	20 31 56.41	33.12	20 32 29.53	38 1 23.93	3.96	3.65	11		Anon.
29.90	30.35	0.45										
26.90	28.20	1.30	0.34	21 8 11.26	33.05	21 8 44.31	37 24 14.62	4.01	11.87	4.5		τ Cygni.
30.85	30.95	0.10										
27.15	28.35	1.20	0.40	21 42 32.38	33.06	21 43 5.44	36 22 48.58	4.10	16.97	10		Anon.
30.70	31.30	0.60										
27.65	28.50	0.85	+0.36	21 39 53.66	+ 33.05	21 40 26.71	36 57 43.32	+ 4.05	+16.48	8.9		Lal. 42507.
30.70	31.20	+0.50										

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M S.	s.	s.	s.	s.	s.	s.		s.	s.	s	s	s.	s.	M. s.
Oct. 9	1	Anon.	E.	S.	22 36 13.8	35.3	55.2	15.6	36.9	56.4	19.0	N.	42.5	4.9	26.3	48.7	10.1	31.2	41 54.6
	2		W.	N.	1 1 57.9	22.2	42.4	3.9	26.5	47.4	9.8	S.	33.6	55.8	15.4	37.4	57.1	17.5	7 39.3
	3	μ Andromedæ	E.	S.	23 37 27.6	50.5	13.5	35.3	56.9	19.5	43.2	N.	13.9	39.5	1.6	24.6	49.1	12.9	43 37.4
	4		W.	N.	1 51 58.5	23.4	47.4	11.0	34.9	57.3	21.8	S.	51.9	16.2	38.0	0.7	23.4	44.9	58 8.1
	5	Lal. 1492	E.	N.	23 51 58.4	25.2	56.4	27.8	59.4	27.5	58.4	S.	10.7	43.8	15.4	48.5	24.3	0.3	60 33.4
	6		W.	S.	1 30 11.4	43.2	20.4	55.5	28.8	0.7	32.6	N.	47.6	17.7	47.9	17.5	48.3	20.4	38 47.4
11	7	λ Cygni	E.	N.	18 54 51.3	4.4	20.4	36.5	51.4	5.9	20.4	S.	23.4	38.4	53.1	8.6	23.6	40.2	58 54.2
	8		W.	S.	22 22 59.1	13.3	29.1	45.5	0.3	14.3	29.6	N.	33.4	47.5	1.9	16.4	32.0	47.5	27 2.2
	9	Anon.	E.	N.	19 26 15.4	36.8	3.7	29.6	53.4	18.9	43.4	S.	30.0	56.6	20.7	46.8	14.6	42.7	33 9.9
	10		W.	S.	21 28 51.4	18.9	47.8	13.9	41.6	4.3	31.6	N.	19.6	43.5	7.9	32.1	56.8	24.4	35 46.9
	11	Lal. 41341	E.	S.	19 35 17.0	34.5	51.1	8.1	25.4	40.4	58.8	N.	7.1	23.6	39.6	57.6	14.5	32.2	39 49.5
	12		W.	N.	22 38 3.4	20.6	38.5	55.6	13.2	30.7	46.5	S.	53.6	11.8	28.9	45.6	1.2	17.8	42 35.3
	13	61^1 Cygni	E.	N.	19 58 35.6	58.6	27.5	55.8	20.7	46.6	11.8	S.	8.6	36.9	3 8	30.4	0.2	30.9	65 57.7
	14		W.	S.	21 53 7.4	34.6	6.0	35.8	2.3	30.2	57.8	N.	52.2	18.7	44.5	9.1	36.9	5.2	60 29.6
15	15	ζ Cygni	E.	N.	18 3 8.6	25.0	42.7	59.5	7.6	17.1	25.7	S.	53.2	2.4	11.4	19.4	36.6	54.2	7 11.4
	16		W.	S.	0 4 49.4	5.8	23.6	41.5	49.5	58.5	7.7	N.	34.4	42.8	51.5	59.6	16.9	34.6	8 51.8
	17	υ Cygni	E.	N.	18 58 39.8	4.4	14.6	27.4	40.5	51.9	4.2	S.	17.7	29.9	41.4	54.5	7.2	18.5	62 43.0
	18		W.	S.	23 18 41.4	6.2	17.6	29.6	42.8	54.4	6.7	N.	21.4	33.5	43.8	56.1	8.9	20.5	22 43.2
	19	(7373)	E.	S.	19 22 3.3	18.4	33.6	48.9	3.3	17.4	33.5	N.	32.8	47.6	3.0	18.1	33.4	48.5	26 5.2
	20		W.	N.	22 47 38.5	54.3	10.4	25.5	39.7	55.4	10.3	S.	9.7	27.2	40.4	56.5	10.2	24.5	51 40.0
	21	(7753)	E.	S.	19 48 49.8	11.8	23.7	34.7	46.4	57.5	8.2	N.	17.9	29.8	40.9	52.4	3.3	16.1	52 38.6
	22		W.	N.	0 18 34.8	58.5	9.9	21.5	32.4	44.1	55.5	S.	5.4	16.6	27.4	38.4	50.3	13.0	22 24.5
	23	61^1 Cygni	E.	N.	19 58 39.6	4.4	30.9	58.0	24.2	..	16.4	S.	11.4	..	7.0	33.6	4.4	34.5	66 1.0
	24		W.	S.	21 53 13.6	39.4	11.6	41.3	9.6	..	2.7	N.	57.3	..	48.6	15.4	40.8	9.3	60 33.5
	25	Lal. 42507	E.	N.	20 12 59.8	16.9	37.6	55.5	13.3	30.4	50.1	S.	7.2	26.5	45.2	2.4	22.2	42.4	18 0.3
	26		W.	S.	23 1 55.9	14.0	34.2	54.0	11.2	30.6	48.5	N.	5.2	23.6	41.6	0.7	18.7	38.6	6 55.2
	27	Lal. 43320	E.	S.	20 29 0.5	18.2	34.4	51.7	8.0	23.5	40.2	N.	48.4	3.4	20.5	37.2	54.5	10.4	33 29.8
	28		W.	N.	23 34 47.9	7.4	22.4	39.8	56.2	12.6	29.3	S.	36.0	54.4	9.8	27.6	41.5	58.7	39 15.6
	29	Lal. 44862	E.	S.	20 55 14.5	41.2	55.5	9.4	22.3	37.2	50.6	N.	14.7	28.1	43.3	56.6	10.4	25.2	59 53.6
	30		W.	N.	0 36 31.6	59.9	14.4	27.9	42.9	56.5	11.0	S.	35.1	48.7	2.6	16.4	30.1	44.6	41 12.2
16	31	α Coronæ Bor.	E.	S.	12 4 31.5	46.7	2.4	18.2	25.[illegible]	33.5	41.3	N.	58.6	6.3	14.2	21.9	37.5	53.3	8 8.6
	32		W.	N.	18 47 22.1	37.6	53.6	9.3	16.6	24.6	32.4	S.	50.2	57.7	5.3	13.3	28.5	44.4	50 59.4
	†33	Lal. 39934	E.	S.	19 34 55.4	22.8	49.9	17.3	45.4	12.1	41.7	N.	35.6	6.1	34.6	4.6	34.7	4.4	42 37.6
	34		W.	N.	21 22 18.5	50.6	21.1	50.9	20.9	49.6	20.6	S.	14.2	43.7	10.2	38.6	6.1	33.8	30 1.2
	35	(7753)	E.	N.	19 48 48.2	11.4	21.6	34.1	47.0	57.0	8.2	S.	19.8	31.3	42.3	54.2	7.1	18.3	52 41.7
	36		W.	S.	0 18 33.4	56.5	7.9	20.5	32.4	44.1	55.1	N.	7.0	18.3	29.1	40.5	53.2	3.9	22 26.7
	37	61^2 Cygni	E.	S.	19 58 43.5	9.2	35.8	2.0	28.5	53.1	21.6	N.	7.3	36.1	1.8	31.0	59.4	27.4	65 56.7
	38		W.	N.	21 53 21.4	50.5	18.6	47.3	16.3	42.5	11.4	S.	57.6	24.6	50.4	16.7	42.6	8.3	60 34.5
	39	61^1 Cygni	E.	S.	19 58 43.9	9.6	36.2	2.4	28.9	53.5	22.0	N.	7.7	36.5	2.2	31.4	59.8	27.8	65 57.1
	40		W.	N.	21 53 17.6	47.5	15.5	43.7	14.0	39.3	8.0	S.	53.8	21.4	46.6	13.9	39.5	4.3	60 31.2
	41	Lal. 42563	E.	S.	20 38 59.9	26.1	50.6	15.4	41.5	5.4	32.7	N.	15.6	44.3	9.8	36.2	3.6	31.1	45 59.2
	42		W.	N.	22 37 28.5	56.9	23.6	50.2	18.9	43.4	12.4	S.	54.6	21.8	45.9	12.2	37.3	1.9	44 27.4

DATE.	CLOCK + AZIMUTH.	CLOCK'S HOURLY RATE.
	h. s.	s.
Oct. 9, 22	+ 33.48	0.000
11, 21	33.05	— .020
15, 21	28.54	.041
16, 21	27.73	.017

33. Double. Observed the brighter.

LEVEL READINGS. Means. N.	LEVEL READINGS. Means. S.	LEVEL READINGS. S. — N.	Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED R. Ascension.	OBSERVED N. Declination.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 Decl.	Magnitude.	Observer.	OBJECT.
N.	S.	Dif	"	H. M. S.	s.	H. M. s.	° ' "	s.	"			
30.10	28.70	−1.40	−0.72	23 51 56.29	+ 33.51	23 52 29.80	37 27 36.84	+ 4.70	+33.64	8.9	P.	Anon.
30.80	29.05	1.75										
30.60	29.20	1.40	0.76	0 47 47.93	33.53	0 48 21.46	37 40 26.66	5.20	37.57	4		μ Andromedæ.
30.75	28.90	1.85										
30.90	29.10	1.80	0.85	0 45 22.40	33.49	0 45 55.89	38 14 33.16	5.14	37.43	9.10		Lal. 1492.
30.80	28.95	1.85										
27.70	27.10	0.60	0.51	20 40 56.57	33.11	20 41 29.68	35 56 25.63	4.27	5.12	5		λ Cygni.
31.65	30.15	1.50										
28.15	27.00	1.15	0.71	20 31 0.83	33.07	20 31 33.90	37 52 49.91	4.13	2.89	11		Anon.
29.90	28.70	1.20										
28.10	27.25	0.85	0.60	21 8 56.50	33.11	21 9 29.61	36 37 38.48	4.18	10.17	..		Lal. 41341.
32.05	30.35	1.70										
28.35	27.30	1.05	−0.53	20 59 32.66	33.07	21 0 5.73	38 0 37.03	4.84	15.49	..		61¹ Cygni.
30.60	29.40	−1.20										
32.55	34.55	+1.80	+1.10	21 6 0.09	28.51	21 6 28.60	29 36 41.62	4.67	10.31	..		ζ Cygni.
35.50	38.40	2.90										
33.05	34.65	1.80	0.89	21 11 12.22	28.53	21 11 40.75	34 15 59.00	4.42	10.48	4.5		υ Cygni.
35.90	37.95	2.05										
33.00	35.10	2.10	0.85	21 6 51.72	28.55	21 7 20.27	36 0 49.55	4.34	9.40	6		(7373)
35.50	37.50	2.00										
33.30	35.40	2.10	1.08	22 5 36.85	28.48	22 6 5.33	33 51 40.70	4.50	19.32	5.6		(7753)
35.50	38.00	2.50										
33.35	34.60	1.25	0.70	20 59 37.35	28.48	21 0 5.83	38 0 37.60	4.92	14.93	..		61¹ Cygni.
34.75	36.50	1.75										
33.25	35.45	2.20	0.99	21 39 57.94	28.53	21 40 26.47	36 57 45.33	4.24	14.95	9		Lal. 42507.
36.00	38.00	2.00										
33.35	35.60	2.25	1.01	22 4 8.64	28.52	22 4 37.16	36 33 4.00	4.30	18.91	11		Lal. 43320.
35.90	37.95	2.05										
33.55	36.10	2.55	1.11	22 48 12.73	28.54	22 48 41.27	35 32 43.92	4.48	+25.40	5		Lal. 44862.
35.80	38.00	2.20										
33.55	36.70	3.15	1.70	15 27 45.53	27.82	15 28 13.35	27 14 6.96	6.98	−44.42	..		α Coronæ Bor.
30.60	34.25	3.65										
30.95	35.05	4.10	2.00	20 32 27.95	27.72	20 32 55.67	38 7 2.72	4.23	+ 2.70	8		Lal. 39934.
32.00	36.35	4.35										
31.05	34.95	3.90	1.77	22 5 37.49	27.72	22 6 5.21	33 51 41.71	4.53	19.18	5.6		(7753)
33.30	36.95	3.65										
31.10	35.00	3.90	1.79	20 59 39.12	27.78	21 0 6.90	38 0 34.01	4.94	14.82	..		61² Cygni.
32.45	35.95	3.50										
31.10	35.00	3.90	1.79	20 59 37.72	27.78	21 0 5.50	38 0 37.64	4.94	14.82	..		61¹ Cygni.
32.45	35.95	3.50										
31.40	35.50	4.10	+1.93	21 41 43.80	+ 27.84	21 42 11.64	37 56 57.23	+ 4.20	+14.97	7.8		Lal. 42563.
33.15	36.25	+3.10										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. S.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
Oct. 18	1	β Lyræ	E.	S.	16 19 0.2	21.5	32.4	43.2	53.4	4.6	14.8	N.	19.1	29.7	40.5	51.2	2.1	13.3	22 35.2
	2		W.	N.	21 5 23.7	45.5	56.6	7.3	17.8	29.5	39.5	S.	45.2	55.4	5.8	16.6	27.6	38.0	8 59.2
	3	ζ Cygni	E.	N.	18 3 8.8	25.7	43.3	0.3	8.4	17.5	26.5	S.	54.1	2.9	12.1	20.3	37.6	55.4	7 12.4
	4		W.	S.	0 4 49.1	6.1	23.7	41.2	49.4	58.6	7.4	N.	34.2	43.2	52.1	0.3	17.6	35.1	8 51.9
	5	ϵ Cygni	E.	S.	18 17 10.9	32.3	43.5	54.2	5.4	16.5	26.5	N.	33.1	43.3	54.5	5.6	16.8	28.2	20 49.9
	6		W.	N.	22 58 21.8	43.7	55.3	5.9	17.3	28.5	38.5	S.	44.8	55.8	7.3	18.1	28.6	39.7	62 1.6
	7	λ Cygni	E	N.	18 54 56.2	9.9	24.1	40.9	55.6	10.4	25.8	S.	28.6	43.5	58.3	12.9	28.8	45.1	56 59.6
	8		W.	S.	22 23 4.4	19.1	35.2	51.0	5.4	20.7	35.2	N.	38.2	53.2	6.4	21.6	37.2	52.4	37 6.3
	9	(7373)	E.	S.	19 22 4.5	19.6	34.3	48.5	4.7	18.4	34.3	N.	33.5	49.4	3.7	19.3	34.1	49.3	26 5.4
	10		W.	N.	22 47 39.5	55.4	10.3	25.5	41.2	55.8	11.4	S.	10.7	26.6	40.7	55.9	10.6	25.2	51 40.8
	†11	Lal. 39934	E.	N.	19 34 48.5	15.5	45.5	14.6	41.6	9.4	36.9	S.	37.2	9.9	40.8	9.3	41.2	13.7	42 44.1
	12		W.	S.	21 22 12.6	41.8	16.3	46.6	16.6	45.4	15.3	N.	18.5	46.6	13.5	41.2	9.6	39.7	30 5.8
	13	Lal. 39934 a	E.	N.	19 34 58.1	23.6	52.4	21.6	49.8	16.5	45.7	S.	49.7	18.7	47.2	18.4	48.5	22.4	42 52.1
	14		W.	S.	21 22 2.0	32.7	6.2	39.1	6.9	37.2	7.8	N.	10.4	38.2	5.8	33.6	2.1	31.8	29 58.2
	15	(7462)	E.	N.	19 43 53.7	9.8	26.7	43.4	59.5	15.3	31.6	S.	41.4	58.1	13.7	30.3	46.9	6.0	48 21.5
	16		W.	S.	22 53 2.9	18.8	36.8	54.2	10.6	26.9	43.2	N.	52.5	8.9	25.3	40.6	57.5	15.3	57 30.5
	17	61^2 Cygni	E.	S.	19 58 45.2	10.9	37.2	2.8	29.4	53.5	21.7	N.	7.8	35.7	3.0	31.6	59.6	27.9	65 57.5
	18		W.	N.	21 53 20.7	50.4	18.3	46.5	15.4	41.5	10.4	S.	56.8	24.9	49.6	16.3	42.2	7.3	60 34.5
	19	61^1 Cygni	E.	S.	19 58 45.2	10.9	37.2	2.8	29.4	53.5	21.7	N.	7.8	35.7	3.0	31.6	59.6	27.9	65 57.5
	20		W.	N.	21 53 17.8	46.7	14.6	43.4	11.4	38.3	7.6	S.	53.9	22.2	46.4	12.4	39.9	4.6	60 31.3
	21	Anon.	E.	S.	20 29 25.4	43.3	59.7	16.4	33.3	49.6	7.3	N.	15.6	33.2	49.8	7.5	24.6	41.7	34 0.2
	22		W.	N.	23 30 21.4	38.6	55.6	13.3	30.5	47.6	5.4	S.	12.9	30.7	46.6	3.9	20.8	37.9	34 54.6
	23	Lal. 42563	E.	N.	20 39 20.4	47.2	12.8	38.1	2.9	29.4	45.2	S.	2.3	20.1	46.9	12.3	39.2	8.4	45 38.1
	24		W.	S.	22 37 48.6	19.4	47.5	14.3	40.5	7.4	24.2	N.	42.3	58.2	23.6	49.5	13.8	40.1	44 8.3
	25	Lal. 44848	E.	S.	20 49 59.6	13.1	26.8	39.7	53.3	5.5	19.8	N.	12.3	26.5	39.2	52.8	5.5	19.6	52 33.2
	26		W.	N.	0 41 49.5	3.2	16.5	30.4	43.6	56.1	10.4	S.	2.8	16.8	29.6	42.9	56.0	9.1	45 22.4
	27	Lal. 44862	E.	N.	20 55 29.6	..	58.8	13.1	26.5	..	54.2	S.	52.9	..	21.4	34.6	49.2	..	59 17.8
	28		W.	S.	0 36 57.7	..	27.1	41.2	55.5	..	23.2	N.	23.6	..	52.3	4.0	18.3	..	40 46.6
	29	Lal. 44862 a	E.	N.	20 55 39.5	52.5	8.0	22.4	35.5	49.6	3.2	S.	3.1	16.8	30.4	43.9	59.2	14.3	59 28.2
	30		W.	S.	0 37 1.0	14.3	29.4	45.1	58.6	12.1	26.4	N.	25.4	39.6	52.3	6.8	21.5	35.4	40 49.5
	31	Anon.	E	S.	21 11 24.2	36.1	47.3	59.8	11.5	22.5	34.6	N.	21.6	33.5	44.5	57.0	9.3	20.4	14 32.6
	32		W.	N.	1 34 26.5	38.9	51.3	2.2	14.6	25.5	37.8	S.	24.8	36.5	47.9	59.9	11.6	23.3	37 35.2
	33	Anon.	E.	N.	21 39 5.3	22.6	42.8	1.8	20.9	38.8	57.6	S.	17.7	37.1	55.7	14.8	34.4	55.7	44 14.6
	34		W.	S.	0 23 6.4	25.7	46.1	6.3	25.4	43.5	3.0	N.	22.7	41.6	59.8	18.1	37.7	57.6	28 15.2
	35	Lal. 1627	E.	N.	23 16 46.0	4.3	22.1	38.6	54.9	12.3	21.5	S.	15.2	24.6	42.5	58.5	25.7	34.2	20 53.2
	36		W.	S.	2 17 32.3	52.1	10.3	27.3	44.2	1.3	10.8	N.	4.9	14.1	31.6	47.8	4.3	21.7	21 40.4
	37	γ Trianguli	E.	S.	23 42 10.2	31.8	42.4	53.3	3.5	14.7	24.6	N.	30.6	40.5	51.6	1.4	12.6	24.2	45 45.4
	38		W.	N.	4 29 55.6	17.4	28.6	39.2	49.5	0.5	10.9	S.	16.2	26.5	37.5	48.3	58.4	9.3	33 30.6
	39	β Trianguli.	E.	N.	23 48 31.2	54.3	6.0	18.9	31.3	42.4	54.6	S.	9.2	20.4	31.8	45.2	58.1	9.2	52 33.7
	40		W.	S.	4 7 34.5	58.5	10.4	23.3	35.5	48.1	59.4	N.	13.8	24.7	37.2	49.3	2.4	14.1	11 37.3
	41	Lal. 4667	E.	S.	0 50 7.3	23.7	40.8	57.1	14.7	31.2	48.5	N.	56.6	14.7	30.3	48.9	5.3	22.6	54 41.1
	42		W.	N.	3 51 37.6	55.5	12.4	30.4	48.0	4.2	22.5	S.	29.2	47.1	3.1	20.3	37.5	53.5	56 11.3

DATE.	CLOCK + AZIMUTH.	CLOCK'S HOURLY RATE.
h.	s.	s.
Oct. 18, 20	+ 27.74	0.000

11. Wire G. Tel. S., recorded 47^s.2.

LEVEL READINGS. Means. N.	LEVEL READINGS. Means. S.	LEVEL READINGS. S.—N.	Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED R. Ascension.	OBSERVED N. Declination.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 Decl.	Magnitude.	Observer.	OBJECT.
N.	S.	Div.	″	H. M. S.	S.	H. M. S.	° ′ ″	S.	″			
25.40	29.15	+3.75	+1.55	18 43 59.60	+ 27.78	18 44 27.38	33 11 46.69	+ 5.14	—16.53	..	P.	β Lyræ.
27.90	30.75	2.85										
24.95	26.85	1.90	1.10	21 6 0.61	27.71	21 6 28.32	29 36 43.27	4.80	+10.15	..		ζ Cygni.
29.30	32.10	2.80										
25.35	27.30	1.95	1.03	20 39 36.02	27.71	20 40 3.73	33 24 34.87	4.68	5.56	3		ε Cygni.
29.20	31.80	2.60										
25.60	28.45	2.85	1.21	20 41 1.71	27.78	20 41 29.49	35 56 26.71	4.41	4.61	6		λ Cygni.
29.00	31.30	2.30										
26.30	29.40	3.10	1.19	21 6 52.44	27.82	21 7 20.26	36 0 50.29	4.40	9.19	6		(7373)
29.50	31.45	1.95										
26.70	29.45	2.75	1.23	20 32 27.92	27.76	20 32 55.68	38 7 3.10	4.28	2.63	10		Lal. 39934.
28.15	30.75	2.60										
26.70	29.45	2.75	1.23	20 32 28.39	27.76	20 32 56.15	38 7 16.95	4.28	2.63	10		Lal. 39934 *a*.
28.15	30.75	2.60										
26.60	29.45	2.85	1.27	21 20 42.19	27.76	21 21 9.95	36 27 50.03	4.34	11.49	5.6		(7462)
29.20	31.75	2.55										
26.90	29.90	3.00	1.26	20 59 39.06	27.83	21 0 6.89	38 0 34.55	4.99	14.69	5.6		61² Cygni.
28.65	30.90	2.25										
26.90	29.90	3.00	1.26	20 59 37.66	27.83	21 0 5.49	38 0 37.72	4.99	14.69	5		61¹ Cygni.
28.65	30.90	2.25										
27.10	30.05	2.95	1.19	22 2 10.26	27.80	22 2 38.06	36 40 26.89	4.35	18.20	11		Anon.
29.50	31.60	2.10										
27.30	30.25	2.95	1.19	21 41 43.54	27.84	21 42 11.38	37 56 57.09	4.24	14.75	7		Lal. 42563.
29.35	31.45	2.10										
27.50	30.55	3.05	1.24	22 47 11.29	27.80	22 47 39.09	35 11 42.75	4.54	24.81	..		Lal. 44848.
29.90	32.00	2.10										
27.70	30.60	2.90	1.19	22 48 14.46	27.78	22 48 42.24	35 32 39.37	4.52	24.90	..		Lal. 44862.
29.80	31.95	2.15										
27.70	30.60	2.90	1.19	22 48 8.32	27.78	22 48 36.10	35 32 26.62	4.52	24.90	..		Lal. 44862 *a*.
29.80	31.95	2.15										
28.00	30.75	2.75	1.29	23 24 29.64	27.74	23 24 57.38	34 7 2.47	4.73	29.30	8		Anon.
30.00	32.75	2.75										
28.20	30.90	2.70	1.13	23 3 40.32	27.79	23 4 8.11	37 4 27.57	4.51	26.67	9		Anon.
29.80	31.90	2.10										
29.40	31.80	2.40	1.06	0 49 13 10	27.76	0 49 40.86	36 40 39.40	5.18	35.62	8		Lal. 1627.
30.90	33.00	2.10										
29.00	31.50	2.50	1.09	2 7 50.57	27.76	2 8 18.33	33 8 26.07	5.82	36.34	5		γ Trianguli.
30.85	32.90	2.05										
29.00	31.50	2.50	1.07	2 0 4.10	27.76	2 0 31.86	34 15 54.05	5.81	36.58	4.5		β Trianguli.
30.95	33.00	2.05										
29.50	32.55	3.05	+1.08	2 23 9.05	+ 27.84	2 23 36.89	36 39 33.65	+ 6.01	+36.29	8.9		Lal. 4667.
30.95	32.50	+1.55										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. S.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
Oct. 25	1	(7320)	E.	N.	19 57 24.1	47.7	16.4	44.5	11.7	37.6	6.2	S.	4.2	32.5	1.3	30.7	0.3	31.8	65 1.9
	2		W.	S.	21 48 19.4	47.2	19.7	50.6	19.2	47.5	15.1	N.	15.1	41.9	8.4	34.8	2.7	31.5	55 57.4
	3	Lal. 43319	E.	S.	20 11 12.1	25.9	40.1	53.6	7.2	20.9	35.6	N.	30.2	45.1	58.3	12.8	27.4	40.6	14 55.2
	4		W.	N.	23 53 11.6	26.4	39.6	54.1	8.1	21.5	36.5	S.	30.4	45.5	58.3	13.2	25.9	39.8	56 54.1
	5	Lal. 41627	E.	N.	20 17 5.3	30.7	58.6	27.1	53.4	20.1	46.9	S.	46.6	14.6	42.5	11.6	42.7	14.8	24 42.4
	6		W.	S.	22 7 57.7	26.0	58.6	28.5	58.2	26.5	54.1	N.	52.5	19.8	45.9	13.3	40.6	9.4	15 34.8
	7	Anon.	E.	N.	20 36 1.3	22.3	47.5	10.2	33.1	55.5	18.5	S.	59.6	23.3	46.5	9.9	36.4	2.4	42 25.6
	8		W.	S.	22 47 47.6	11.2	37.6	3.0	27.3	50.3	14.2	N.	54.2	16.8	39.3	2.4	26.2	50.5	54 12.5
	9	α Andromedæ	E.	S.	20 45 14.3	30.5	46.5	2.3	10.4	18.7	26.7	N.	47.5	55.5	2.9	11.6	27.7	44.4	49 0.5
	10		W.	N.	3 10 3.3	20.4	36.5	52.6	1.2	9.0	17.3	S.	38.2	45.9	53.6	2.3	17.7	34.4	14 50.4
	11	Lal. 44319	E.	N.	20 57 17.8	33.3	51.5	8.2	24.5	40.6	58.1	S.	9.3	26.5	42.4	59.7	17.3	35.7	61 52.6
	12		W.	S.	0 1 31.5	48.1	6.7	24.8	41.3	58.1	15.2	N.	25.5	42.8	58.4	15.2	32.4	49.6	6 6.1
	13	Lal. 44854	E.	S.	21 7 11.9	27.5	43.5	58.4	14.3	29.7	45.8	N.	48.1	5.0	20.4	36.7	52.1	8.2	11 24.5
	14		W.	N.	0 23 32.5	48.6	4.2	20.3	36.9	52.0	8.5	S.	11.4	27.8	42.6	58.3	14.3	29.2	27 45.2
	15	σ Andromedæ	E.	N.	22 23 53.1	6.4	22.7	38.0	52.4	7.3	21.9	S.	24.4	39.5	54.2	9.1	24.1	41.5	27 55.3
	16		W.	S.	1 51 52.2	6.0	23.4	38.5	53.5	8.0	23.6	N.	25.9	41.2	55.6	10.3	25.5	41.6	55 55.0
	17	Anon.	E.	S.	22 36 15.9	37.2	57.9	17.9	39.3	59.2	20.9	N.	45.7	8.4	29.5	52.4	12.9	34.9	41 57.5
	18		W.	N.	1 1 59.5	20.5	43.1	4.7	26.6	47.8	10.3	S.	34.5	57.2	16.2	37.8	58.6	19.1	7 41.3
	19	β Andromedæ	E.	N.	22 57 3.6	11.1	23.2	36.5	49.9	2.4	14.6	S.	33.3	45.7	58.5	11.6	25.7	37.5	60 45.5
	20		W.	S.	2 0 42.5	50.3	2.9	17.0	29.9	42.4	55.2	N.	13.6	25.7	39.0	52.3	5.4	17.5	4 25.9
	21	Lal. 656	E.	S.	23 6 15.5	37.6	57.8	18.9	40.5	0.7	22.4	N.	48.0	10.6	31.5	53.5	16.1	37.9	11 0.6
	22		W.	N.	1 30 34.7	57.4	19.3	41.5	3.4	24.8	47.6	S.	12.9	35.1	54.6	16.2	37.1	57.5	36 19.1
	23	(516)	E.	N.	23 24 5.3	30.4	41.9	55.5	7.7	19.6	31.5	S.	46.7	58.8	10.2	24.3	37.4	48.6	28 13.3
	24		W.	S.	3 37 21.0	45.2	57.0	10.8	23.1	35.6	47.5	N.	3.3	15.1	27.1	39.4	52.6	4.1	41 28.7
	25	Lal. 2330	E.	S.	23 35 13.9	30.5	46.8	3.1	20.4	35.8	53.3	N.	0.4	18.0	35.0	51.8	8.9	25.6	39 43.5
	26		W.	N.	2 39 39.1	57.3	13.8	31.5	48.9	4.4	22.0	S.	28.5	45.4	1.9	18.9	35.5	51.7	44 8.4
	27	γ Trianguli	E.	N.	23 42 6.3	27.9	37.5	49.8	0.6	11.5	21.9	S.	27.6	38.5	48.8	0.3	11.0	21.9	45 44.0
	28		W.	S.	4 29 50.5	12.2	22.6	34.4	45.6	56.2	6.8	N.	13.5	24.0	34.5	45.5	57.2	7.8	33 28.6
	29	β Trianguli	E.	S.	23 48 53.6	5.5	17.5	29.0	41.6	52.5	4.9	N.	52.6	5.3	16.6	29.0	41.1	52.7	52 5.2
	30		W.	N.	4 7 56.5	9.4	21.3	33.1	45.4	56.5	9.5	S.	57.1	9.3	20.5	32.6	44.6	55.4	11 7.3
	31	(576)	E.	N.	0 7 57.5	13.3	27.6	44.5	..	..	..	S.	..	..	..	51.6	8.4	23.3	10 40.3
	32		W.	S.	3 20 19.6	36.5	52.1	8.3	..	..	..	N.	..	..	..	15.5	31.4	46.2	23 2.8
	33	(877)	E.	S.	0 32 45.4	57.5	9.4	22.2	34.3	45.2	58.6	N.	47.3	0.5	11.3	23.5	36.5	48.5	36 0.7
	34		W.	N.	4 47 19.4	31.3	44.1	56.3	8.9	20.3	33.1	S.	20.9	33.6	45.1	57.4	10.0	21.5	50 33.5
	35	(915)	E.	N.	0 41 44.5	8.9	20.6	34.3	46.8	58.7	10.2	S.	27.2	38.6	51.4	3.2	18.0	29.8	45 54.3
	36		W.	S.	4 52 24.2	49.1	1.0	14.3	27.0	39.5	51.6	N.	8.4	20.6	32.5	45.5	58.4	10.3	56 34.2
	37	Lal. 4667	E.	S.	0 50 4.4	21.4	37.6	54.1	12.3	27.5	46.0	N.	54.6	12.2	28.7	46.0	3.6	21.2	54 38.6
	38		W.	N.	3 51 33.3	52.3	7.8	26.9	44.0	0.2	18.5	S.	25.5	43.9	0.3	17.0	33.4	50.1	56 7.4
Oct. 26	39	(7753)	E.	N.	19 48 46.2	8.3	19.3	31.5	43.6	54.5	5.9	S.	16.1	28.5	39.6	51.8	4.5	15.6	52 38.6
	40		W.	S.	0 18 31.2	54.5	5.3	18.0	30.2	41.4	52.2	N.	2.4	14.2	25.2	37.5	49.6	0.6	22 22.6
	41	61 Cygni	E.	S.	19 58 42.2	8.8	33.6	59.5	26.3	52.0	19.0	N.	4.9	35.2	1.0	29.6	58.8	26.5	65 53.5
	42		W.	N.	21 53 13.5	44.7	11.4	39.7	9.0	33.8	2.9	S.	51.4	17.8	44.2	9.4	35.5	2.3	60 27.0

DATE.	CLOCK + AZIMUTH.	CLOCK'S HOURLY RATE.
h.	s.	s.
Oct. 25, 1	+ 31.34	0.000
26, 22	30.72	— .035

LEVEL READINGS. Means. N.	LEVEL READINGS. Means. S.	LEVEL READINGS. S. — N.	Corr. for Level.	MEAN OF WIRES	Correction in Right Ascension.	OBSERVED R. Ascension.	OBSERVED N. Declination.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 Decl.	Magnitude.	Observer.	OBJECT.
N.	S.	Div.	″	H. M. S.	s.	H. M. S.	° ′ ″	s.	″			
28.95	30.00	+1.05	+0.23	20 56 40.05	+ 31.46	20 57 11.51	38 3 53.71	+ 4.40	+ 6.75	7	P.	(7320)
30.20	30.15	−0.05										
29.00	30.05	+1.05	0.43	22 4 3.21	31.35	22 4 34.56	35 35 13.03	4.54	18.05	9		Lal. 43319.
31.15	31.95	0.80										
29.05	30.05	1.00	0.27	21 16 20.11	31.44	21 16 51.55	38 3 57.01	4.37	10.04	9		Lal. 41627.
30.45	30.60	0.15										
29.05	30.00	0.95	0.35	21 45 6.63	31.38	21 45 38.01	37 43 25.08	4.39	14.78	10		Anon.
30.70	31.25	0.55										
29.35	30.15	0.80	0.39	0 0 2.29	31.34	0 0 33.63	28 15 12.14	5.12	31.91	..		α Andromedæ.
32.60	33.40	0.80										
29.00	30.15	1.15	0.33	22 31 41.94	31.41	22 32 13.35	36 35 25.48	4.52	21.78	8		Lal. 44319.
31.60	31.85	0.25										
29.10	30.40	1.30	0.46	22 47 28.49	31.39	22 47 59.88	36 16 18.68	4.58	23.88	6		Lal. 44854.
31.65	32.30	0.65										
30.30	31.05	0.75	0.30	0 9 53.92	31.36	0 10 25.28	35 56 40.46	4.94	32.25	5.6		σ Andromedæ.
32.15	32.60	0.45										
30.50	31.25	0.75	0.25	23 51 58.10	31.38	23 52 29.48	37 27 40.34	4.79	30.67	8		Anon.
32.25	32.55	0.30										
30.50	31.55	1.05	0.25	1 0 44.21	31.40	1 1 15.61	34 48 51.88	5.32	35.02	..		β Andromedæ.
33.00	33.00	0.00										
30.95	31.50	0.55	0.14	0 21 17.58	31.34	0 21 48.92	37 29 19.74	4.95	32.91	9.10		Lal. 656.
32.30	32.80	0.50										
30.95	31.80	0.85	0.22	1 32 47.20	31.38	1 33 18.58	34 28 35.72	5.50	35.67	5.6		(516)
32.95	33.00	0.05										
31.15	31.80	+0.65	0.13	1 9 41.24	31.39	1 10 12.63	36 35 7.47	5.31	35.24	8		Lal. 2330.
32.60	32.50	−0.10										
31.10	32.00	+0.90	0.34	2 7 47.41	31.35	2 8 18.76	33 8 27.46	5.77	35.63	5.6		γ Trianguli.
33.05	33.60	0.55										
31.35	32.15	0.80	0.43	2 0 0.99	31.33	2 0 32.32	34 15 55.93	5.74	35.59	5		β Trianguli.
32.50	33.55	1.05										
31.35	32.15	+0.80	0.18	1 45 29.94	31.40	1 46 1.34	36 22 44.89	5.61	35.77	6		(576)
33.00	32.92	−0.08										
31.50	32.60	+1.10	0.32	2 41 39.87	31.38	2 42 11.25	34 25 46.44	6.05	34.10	5		(877)
33.35	33.60	0.25										
31.50	32.50	1.00	0.38	2 49 9.39	31.35	2 49 40.74	34 34 8.25	6.13	33.99	5		(915)
33.10	33.85	0.75										
31.50	32.80	1.30	0.33	2 23 6.00	31.35	2 23 37.35	36 39 34.84	5.99	35.23	9		Lal. 4667.
33.00	33.10	0.10										
32.65	34.45	1.80	0.60	22 5 34.68	30.75	22 6 5.43	33 51 41.63	4.71	18.25	5		(7753)
36.60	37.85	1.25										
33.35	34.40	1.05	+0.79	20 59 34.57	+ 30.81	21 0 5.38	38 0 38.00	+ 5.16	+ 14.20	..		61 Cygni.
34.45	35.05	+0.60										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G	F.	E.	D.	C.	B.	A.
					H. M. s	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
Oct. 26	1	Lal. 43319	E.	N.	20 11 9.6	23.6	38.5	53.4	6.4	20.0	33.2	S.	33.3	47.1	0.2	14.4	29.2	44.9	14 58.1
	2		W.	S.	23 53 10.4	22.1	38.4	52.5	7.2	20.5	34.2	N.	33.6	47.5	0.2	14.1	28.7	43.2	56 55.5
	3	Lal. 44349	E.	S.	20 57 22.7	39.2	54.5	10.4	27.6	44.6	2.2	N.	8.3	25.2	41.6	59.3	16.2	32.2	61 51.5
	4		W.	N.	0 2 28.4	45.5	2.2	19.1	36.5	53.2	10.2	S.	17.0	34.8	59.3	7.4	24.5	40.3	6 57.9
	5	Anon.	E.	N.	21 7 41.8	2.1	23.6	44.5	3.9	23.6	44.2	S.	11.9	30.8	51.5	13.1	34.9	57.5	13 17.0
	6		W.	S.	23 38 53.7	12.4	36.2	57.5	18.3	39.7	0.2	N.	28.0	46.8	6.9	27.9	48.0	9.9	44 27.5
	7	Anon.	E.	S.	21 46 6.9	23.4	41.2	58.4	16.3	33.0	51.7	N.	1.2	21.4	37.6	55.7	13.8	31.6	50 50.2
	8		W.	N.	0 40 53.5	12.0	31.1	47.6	6.8	23.8	42.5	S.	52.5	10.1	28.2	45.3	2.5	19.1	45 37.5
	9	Anon.	E.	N.	22 16 30.4	52.2	18.0	41.7	6.2	29.6	52.5	S.	38.5	4.4	28.3	51.9	19.7	47.8	23 13.1
	10		W.	S.	0 24 34.2	58.5	26.9	52.5	17.5	42.6	8.0	N.	52.6	16.8	40.4	3.1	28.8	54.1	31 16.2
	11	Anon.	E.	N.	22 36 22.2	36.7	52.5	9.2	23.3	38.1	52.4	S.	56.6	12.3	26.7	41.8	57.5	15.1	40 29.7
	12		W.	S.	2 0 19.2	33.3	49.8	6.2	21.3	36.8	52.4	N.	55.5	10.0	25.6	39.6	55.9	12.9	4 26.3
	13	ρ Andromedæ	E.	S.	22 49 17.4	35.5	53.6	13.4	32.5	50.8	9.9	N.	26.8	47.5	6.0	24.3	44.5	4.3	54 23.5
	14		W.	N.	1 30 51.4	13.1	31.6	51.4	11.9	30.0	51.1	S.	7.5	26.5	45.6	2.3	21.6	41.5	36 0.2
	15	Lal. 631	E.	S.	23 16 30.6	47.8	4.3	20.7	38.7	55.2	12.3	N.	22.1	38.6	54.5	13.2	30.5	48.6	21 6.2
	16		W.	N.	2 17 15.4	33.1	50.6	8.8	26.7	43.2	0.7	S.	9.2	26.6	42.9	0.9	17.2	33.1	21 50.4
28	17	(7777)	E.	S.	20 42 43.6	1.8	21.0	38.9	56.5	14.3	33.5	N.	47.2	6.3	24.4	43.6	2.9	21.6	47 40.2
	18		W.	N.	23 30 5.8	24.2	43.6	2.2	22.4	38.6	58.7	S.	13.8	33.2	50.6	9.1	27.4	44.5	35 3.0
	19	Lal. 44340	E.	N.	20 57 22.6	38.1	55.5	12.1	28.5	44.8	1.8	S.	12.2	28.2	45.3	1.7	19.5	38.9	61 53.6
	20		W.	S.	0 2 28.4	45.3	3.9	22.3	38.5	54.5	12.0	N.	21.5	38.5	54.7	10.3	27.9	45.6	7 1.2
	21	Anon.	E.	S.	21 11 ..	54.1	20.5	47.4	14.3	44.7	7.0	N.	14.9	40.0	10.2	37.3	6.1	36.5	17 ..
	22		W.	N.	23 0 ..	7.3	37.5	6.2	36.1	6.1	29.5	S.	37.7	1.6	31.4	55.6	24.5	53.2	5 ..
	23	Lal. 46811	E.	N.	21 32 50.0	12.4	23.6	36.5	49.2	..	..	S.	..	..	48.4	1.1	15.0	25.6	36 50.5
	24		W.	S.	1 53 19.4	43.6	55.5	8.2	21.3	..	..	N.	..	..	20.6	33.5	45.6	57.2	57 21.1
	25	Anon.	E.	S.	21 46 9.9	24.6	44.1	1.0	19.3	34.5	54.6	N.	3.9	22.6	39.5	58.2	14.3	34.1	50 52.2
	26		W.	N.	0 40 56.4	14.7	33.4	51.6	8.0	27.5	45.2	S.	55.6	13.5	30.0	49.2	5.8	23.5	45 40.8
	27	Lal. 46188	E.	N.	21 59 43.5	2.9	20.9	38.7	57.4	15.2	32.3	S.	49.9	8.2	27.6	44.5	5.3	27.1	64 42.4
	28		W.	S.	0 48 48.8	5.1	26.4	43.8	3.4	21.5	40.5	N.	57.5	15.3	32.6	50.3	9.5	28.6	53 45.5
	29	(8139)	E.	S.	22 6 ..	..	28.3	50.7	14.0	36.6	48.1	N.	0.6	13.5	38.6	1.4	26.8	..	10 ..
	30		W.	N.	0 16 ..	..	38.4	1.6	25.5	50.3	3.9	S.	13.5	26.3	50.7	12.6	36.3	..	20 ..
	31	Lal. 47269	E.	S.	22 51 29.1	51.5	15.3	38.5	0.5	25.3	43.5	N.	40.8	1.6	27.4	50.5	16.2	42.5	57 7.6
	32		W.	N.	0 59 58.9	24.5	49.9	15.6	37.9	2.0	22.6	S.	20.1	39.3	4.2	27.6	52.0	15.4	65 37.4
	33	Lal. 631	E.	N.	23 16 30.7	46.1	5.8	21.7	39.1	55.2	12.3	S.	24.7	42.2	58.5	16.6	34.4	52.6	21 9.1
	34		W.	S.	2 17 17.3	32.6	51.6	19.8	26.2	44.5	0.9	N.	12.9	30.3	46.5	3.2	21.0	38.8	21 54.5
29	35	Anon.	E.	N.	20 48 32.6	59.4	11.9	25.6	39.7	52.3	5.2	S.	27.8	41.2	54.6	7.3	23.5	35.7	53 2.4
	36		W.	S.	0 41 20.9	47.6	0.3	15.2	29.8	42.5	55.5	N.	17.7	30.5	43.4	57.7	11.4	23.7	45 49.1
	37	Anon.	E.	S.	20 58 19.8	36.4	53.5	9.3	25.6	42.2	1.5	N.	6.3	25.7	41.5	58.5	15.6	32.2	62 50.4
	38		W.	N.	0 1 44.5	1.6	18.5	36.4	54.6	10.0	27.5	S.	37.4	52.2	8.6	26.5	42.8	59.1	6 16.9
	39	(8136)	E.	N.	21 54 53.2	11.2	34.0	55.4	15.2	34.0	55.3	S.	21.2	42.2	3.2	23.3	45.5	7.3	60 28.6
	40		W.	S.	0 25 47.1	5.2	28.6	49.6	11.9	32.0	52.7	N.	20.0	40.8	1.0	19.9	41.3	3.0	31 21.2
	41	Lal. 46097	E.	S.	22 8 40.2	1.6	22.5	42.4	4.2	23.6	45.6	N.	9.4	31.5	54.1	15.2	37.1	59.6	14 22.2
	42		W.	N.	0 33 50.3	13.0	32.9	55.6	17.7	37.5	0.7	S.	27.6	47.8	7.4	29.8	50.8	10.8	39 31.6

DATE.		CLOCK + AZIMUTH.	CLOCK'S HOURLY RATE.
	h.	s.	s.
Oct. 26,	22	+ 39.72	— 0.035
28,	23	28.56	.030
29,	0	27.83	.000

October 28. Bad night for observing.

LEVEL READINGS.			Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED		REDUCTION TO 1850.0		Magnitude.	Observer.	OBJECT.
Means.		S. — N.				R. Ascension.	N. Declination.	R. A.	Decl.			
N.	S.	Div.	"	H. M. S.	S.	H. M. S.	° ′ ″	S.	″			
33.25	34.45	+1.20	+0.58	22 4 3.53	+ 30.71	22 4 34.24	35 35 13.70	+ 4.56	+17.90	8	P.	Lal. 43319.
35.70	37.00	1.30										
33.50	34.65	1.15	0.59	22 32 9.39	30.69	22 32 40.08	36 34 5.68	4.54	21.70	7		Lal. 44340.
36.00	37.35	1.35										
33.50	34.75	1.25	0.56	22 26 5.47	30.71	22 26 36.18	37 21 2.70	4.48	20.65	9.10		Anon.
35.45	36.60	1.15										
33.90	35.10	1.20	0.54	23 15 51.96	30.69	23 16 22.65	36 49 26.30	4.66	27.01	9		Anon.
36.90	38.00	1.10										
34.35	36.10	1.75	0.70	23 23 53.05	30.75	23 24 23.80	37 47 19.56	4.65	27.76	7.8		Anon.
36.85	37.85	1.00										
34.60	36.10	1.50	0.57	0 20 24.24	30.68	0 20 54.92	36 3 38.29	5.01	32.76	8		Anon.
36.75	37.70	0.95										
34.60	36.15	1.55	0.56	0 12 38.41	30.70	0 13 9.11	37 7 41.80	4.93	32.16	..		ρ Andromedæ.
36.70	37.50	0.80										
34.65	36.50	1.85	0.79	0 49 10.79	30.68	0 49 41.47	36 40 41.33	5.18	34.30	9		Lal. 631.
36.55	38.05	1.50										
35.30	38.45	3.15	1.47	22 8 53.31	28.59	22 9 21.90	36 59 54.45	4.51	18.12	5		(7777)
37.35	40.45	3.10										
35.20	38.85	3.65	1.75	22 32 11.68	28.57	22 32 40.25	36 34 5.67	4.57	21.41	..		Lal. 44340.
37.60	41.40	3.80										
35.50	38.75	3.25	1.53	22 3 22.67	28.59	22 3 51.26	38 6 24.42	4.44	17.13	10		Anon.
36.90	40.15	3.25										
35.45	39.20	3.75	1.43	23 45 4.94	28.53	23 45 33.47	34 12 41.63	4.90	29.85	9		Lal. 46811.
38.20	42.00	3.80										
35.85	39.10	3.25	1.46	23 15 54.69	28.51	23 16 23.20	36 49 26.15	4.68	26.67	11		Anon.
37.95	41.75	3.80										
35.80	39.45	3.65	1.62	23 26 45.14	28.53	23 27 13.67	36 57 34.92	4.71	27.79	8		Lal. 46188
37.85	41.75	3.90										
35.75	39.65	3.90	1.77	23 13 32.03	28.58	23 14 0.61	37 45 15.36	4.63	26.30	8.9		(8139)
37.95	41.55	3.60										
36.50	39.95	3.45	1.75	23 58 32.67	28.47	23 59 1.14	37 46 55.61	4.83	30.62	9		Lal 47269.
37.70	41.70	4.00										
36.50	40.70	4.20	1.31	0 49 12.90	28.53	0 49 41.43	36 40 41.64	5.17	33.89	8		Lal. 631.
39.00	42.95	3.95										
34.00	37.10	3.10	1.48	22 47 11.59	27.82	22 47 39.41	35 10 45.40	4.70	23.45	9		Anon.
36.55	39.75	3.20										
33.95	37.40	3.45	1.53	22 32 17.68	27.85	22 32 45.53	36 36 41.96	4.59	21.32	10.11		Anon.
35.95	39.05	3.10										
34.50	37.85	3.35	1.51	23 13 7.37	27.85	23 13 35.22	37 21 25.58	4.69	26.16	6		(8136)
36.50	39.60	3.10										
34.50	38.00	3.50	+1.59	23 24 5.81	+ 27.85	23 24 33.66	37 28 21.02	+ 4.70	+27.29	9.10		Lal. 46097.
36.45	39.75	+3.30										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. S.	s.	s.	s.	s.	s.	s.		s.	s.	s	s.	s.	s.	M. s.
Oct. 29	1	(158)	E.	N.	22 21 17.7	42.4	53.6	7.2	20.3	31.7	44.1	S.	1.0	13.3	25.5	38.3	51.6	2.8	25 28.5
	2		W.	S.	2 32 6.5	31.4	43.4	56.5	9.9	22.3	34.1	N.	50.4	1.8	14.2	26.5	40.2	51.6	36 16.5
	3	Lal. 47269	E.	S.	22 51 5.7	28.7	52.5	15.3	39.6	2.0	26.3	N.	1.8	27.7	50.3	16.3	41.5	5.2	57 31.8
	4		W.	N.	0 59 34.4	59.6	25.8	49.0	15.2	37.5	3.0	S.	40.5	6.3	27.0	52.3	16.1	37.5	66 1.8
	5	Lal. 884	E.	N.	23 10 41.4	0.4	22.5	43.7	3.7	23.5	..	S.	..	34.8	56.3	17.5	38.5	2.2	16 22.5
	6		W.	S.	1 38 39.9	59.9	23.4	45.8	6.4	27.6	..	N.	..	37.5	58.2	17.6	39.0	0.7	44 19.9
	7	Lal. 762	E.	S.	23 23 36.5	1.0	27.6	54.5	20.5	46.2	59.3	N.	21.6	33.4	3.1	29.9	56.9	26.3	29 54.9
	8		W.	N.	1 18 25.5	54.2	22.4	50.6	16.8	46.2	58.6	S.	21.5	33.6	1.3	25.3	52.7	18.2	24 44.5
Nov. 5	9	Anon.	E.	N.	20 38 9.8	25.6	43.4	0.2	16.6	33.2	48.5	S.	58.6	16.2	31.2	48.5	5.7	24.2	42 41.5
	10		W.	S.	23 45 8.0	23.6	42.1	0.2	16.3	33.0	49.5	N.	59.2	15.1	31.6	46.6	4.3	21.4	49 37.6
	11	α Andromedæ	E.	S.	20 45 12.4	28.2	44.7	0.9	8.3	16.6	25.4	N.	45.7	53.7	2.2	9.3	26.4	42.5	48 58.4
	12		W.	N.	3 11 1.5	18.5	34.7	51.2	59.0	6.6	15.3	S.	36.4	43.6	51.8	0.5	15.9	32.2	14 49.3
	13	Anon.	E.	S.	21 10 55.4	23.7	49.5	17.5	44.8	11.9	41.6	N.	35.1	4.5	32.4	2.2	34.5	2.4	18 34.8
	14		W.	N.	22 58 58.3	30.2	59.7	31.4	1.7	28.8	0.2	S.	55.5	23.4	50.5	20.4	46.4	13.6	66 40.3
	15	Anon.	E.	S.	21 39 4.1	22.7	41.0	59.5	18.9	36.5	56.3	N.	11.1	29.6	49.0	8.0	26.4	47.5	44 6.8
	16		W.	N.	0 23 2.4	23.2	41.9	0.6	20.8	38.4	58.5	S.	14.3	33.5	52.4	10.9	29.4	46.5	28 6.2
	17	Anon.	E.	N.	21 51 44.3	58.8	15.5	30.4	46.0	..	..	S.	..	..	50.2	5.3	21.7	38.5	55 53.6
	18		W.	S.	1 14 22.1	37.5	54.2	10.0	25.6	..	..	N.	..	..	28.9	44.5	0.5	16.5	18 30.6
	19	Lal. 46097	E.	N.	22 8 33.1	52.3	15.1	37.6	..	..	39.5	S.	8.3	..	..	12.3	35.1	59.5	14 20.6
	20		W.	S.	0 33 39.5	1.4	24.7	47.5	..	..	51.6	N.	21.9	..	..	24.4	46.6	8.9	39 28.8
	21	ρ Andromedæ	E.	S.	22 49 14.4	34.1	53.3	11.5	31.3	48.8	..	N.	..	46.4	4.2	24.1	43.4	3.1	54 22.5
	22		W.	N.	1 30 48.8	9.0	29.0	47.6	8.4	27.2	..	S.	..	22.9	41.6	0.3	18.9	38.2	35 57.1
11	23	Anon.	E.	S.	21 31 14.7	37.6	49.4	0.6	13.0	24.3	35.5	N.	46.3	58.2	8.8	22.3	33.5	46.4	35 9.5
	24		W.	N.	1 53 55.8	19.3	31.5	43.4	56.7	8.0	19.0	S.	30.8	41.6	53.5	4.8	16.6	28.0	57 52.5
	25	Anon.	E.	N.	21 40 27.3	44.2	2.0	19.6	36.1	53.1	10.4	S.	22.5	40.6	57.3	14.7	32.6	52.2	45 7.7
	26		W.	S.	0 40 36.0	51.9	11.8	30.0	46.2	3.8	21.4	N.	35.5	51.8	8.0	24.5	42.5	1.3	45 16.2
	27	Anon.	E.	S.	21 51 46.0	2.6	18.7	32.1	47.8	2.4	18.0	N.	19.1	34.0	49.5	5.0	20.8	36.5	55 52.1
	28		W.	N.	1 14 23.5	40.5	55.2	9.8	26.5	41.7	56.5	S.	58.4	15.0	28.5	44.2	57.4	13.7	18 30.5
	†29	α Arietis	E.	N.	22 1 43.6	57.4	10.9	23.6	30.4	38.0	44.6	S.	51.4	57.8	5.4	12.8	25.5	40.1	4 53.3
	†30		W.	S.	5 51 17.5	31.5	45.2	58.1	5.2	12.0	19.0	N.	26.2	33.1	40.4	46.5	59.7	13.4	54 26.7
	31	(8195)	E.	S.	22 36 0.0	33.2	6.5	38.8	14.6	49.6	22.9	N.	47.7	26.8	2.0	44.0	22.8	2.4	45 44.5
	32		W.	N.	0 0 48.9	31.2	11.8	49.9	29.1	8.2	45.8	S.	11.4	49.8	22.6	56.7	30.1	3.4	10 37.2
	33	Lal. 1702	E.	N.	22 48 42.1	55.0	8.8	22.0	33.5	46.2	..	S.	..	6.8	19.4	31.5	45.2	58.8	52 12.2
	34		W.	S.	2 50 41.7	53.8	8.2	21.5	34.0	46.3	..	N.	..	5.6	17.4	29.9	43.3	57.1	54 10.3
	35	β Andromedæ	E.	S.	22 56 47.4	12.0	25.4	38.5	51.3	4.3	16.1	N.	31.6	44.0	56.6	9.6	22.1	35.5	61 0.6
	36		W.	N.	3 0 24.4	49.3	3.0	15.9	28.1	41.2	53.5	S.	11.6	22.9	36.1	48.5	0.9	13.9	4 38.9
	37	(343)	E.	N.	23 34 11.9	27.7	48.4	6.8	24.5	40.6	58.0	S.	17.4	35.5	52.4	11.3	31.0	51.9	39 8.4
	38		W.	S.	2 25 7.4	24.3	44.9	5.5	22.0	41.2	58.0	N.	15.3	33.1	49.2	8.6	25.5	45.4	30 1.3
	39	γ Trianguli	E.	S.	23 42 7.2	28.1	39.1	50.2	0.2	11.5	22.0	N.	27.0	37.5	47.8	58.8	8.3	20.4	45 42.5
	40		W.	N.	4 29 50.3	12.2	23.4	33.5	44.5	55.3	6.1	S.	11.0	21.3	31.5	42.6	53.8	4.3	33 25.4
	41	Anon.	E.	S.	0 16 44.6	4.0	26.4	47.5	9.8	30.3	..	N.	..	39.7	0.5	22.5	44.3	7.0	22 29.2
	42		W.	N.	2 40 45.3	6.0	29.8	51.4	13.4	33.5	..	S.	..	46.4	5.6	26.4	46.2	7.2	46 30.3

DATE.	CLOCK +AZIMUTH.	CLOCK'S HOURLY RATE.
	h. s.	s.
Oct. 29,	0 + 27.83	0.000
Nov. 5,	0 32.91	+ .015
11,	2 32.76	.000

30. Level reading incomplete. Deduced the assumed value from the other observations of this evening.

LEVEL READINGS.			Corr. for Level.	MEAN OF WIRES	Correction in Right Ascension.	OBSERVED		REDUCTION TO 1850.0		Magnitude.	Observer.	OBJECT.
Means.		S.—N.				R.Ascension.	N.Declination.	R. A.	Decl.			
M.	s.	*Div.*	"	H. M. s.	s.	H. M. s.	° ′ ″	s.	″			
34.50	38.35	+ 3.85	+1.55	0 28 47.19	+ 27.84	0 29 15.03	34 33 52.37	+ 5.10	+32.83	6	P.	(158)
36.75	40.35	3.60										
34.75	38.35	3.60	1.69	23 58 33.33	27.83	23 59 1.16	37 46 54.97	4.85	30.43	9.10		Lal. 47269.
36.40	40.00	3.60										
35.00	38.99	3.99	1.77	0 27 31.00	27.87	0 27 58.87	37 24 59.72	5.02	32.52	8		Lal. 884.
36.50	40.05	3.55										
35.35	38.90	3.55	1.71	0 24 10.11	27.80	0 24 37.91	38 0 25.64	4.99	32.56	8.9		Lal. 762.
36.35	40.10	3.75										
29.65	30.00	0.35	0.11	22 13 53.99	32.89	22 14 26.88	36 31 14.05	4.71	18.51	11		Anon.
33.50	33.65	+0.15										
30.10	29.85	−0.25	0.11	0 0 0.40	32.90	0 0 33.30	28 15 12.18	5.21	30.77	..		α Andromedæ.
34.20	34.40	+0.20										
30.00	30.47	0.47	0.09	22 8 47.52	32.89	22 9 20.41	37 36 22.49	4.63	17.60	9		Anon.
32.60	33.00	0.40										
30.50	31.05	+0.55	0.12	23 3 34.86	32.95	23 4 7.81	37 4 29.62	4.75	24.59	10		Anon.
34.15	34.10	−0.05										
30.90	31.05	+0.15	0.08	23 35 7.80	32.90	23 35 40.70	36 5 51.62	4.88	27.84	10.11		Anon.
34.57	34.75	+0.18										
31.70	31.65	−0.05	−0.08	23 24 0.31	32.89	23 24 33.20	37 28 21.71	4.79	26.57	9		Lal. 46097
34.20	34.40	+0.20										
32.45	33.02	0.57	+0.25	0 12 36.13	32.93	0 13 9.06	37 7 44.00	5.00	30.70	5.6		ρ Andromedæ.
34.60	34.85	+0.25										
33.70	32.00	−1.70	−0.53	23 44 32.87	32.75	23 45 5.62	34 4 4.68	5.05	28.32	9		Anon.
37.00	36.45	0.55										
33.50	32.10	1.40	0.52	23 12 52.19	32.72	23 13 24.91	36 41 34.60	4.88	24.95	9.10		Anon.
36.20	35.40	0.80										
33.80	32.10	1.70	0.65	23 35 8.07	32.71	23 35 40.78	36 5 51.78	4.96	27.39	10		Anon.
36.80	35.75	1.05										
33.65	32.40	1.25	0.07	1 58 5.36	32.74	1 58 38.10	22 44 26.97	5.57	33.54	..		α Arietis.
. .	. .	0.00										
34.20	33.40	0.80	0.63	23 53 17.71	32.78	23 23 50.49	38 24 17.56	4.90	25.57	6		(8195)
35.10	34.20	0.90										
34.30	33.50	0.80	0.51	0 51 26.27	32.75	0 51 59.02	34 52 19.01	5.27	32.15	9		Lal. 1702.
37.90	37.35	0.55										
34.35	33.50	0.85	0.29	1 0 42.97	32.74	1 1 15.71	34 48 55.57	5.36	32.47	2		β Andromedæ.
37.95	37.50	0.45										
34.65	34.12	0.53	0.23	1 2 7.41	32.75	1 2 40.16	36 54 56.82	5.21	32.29	5.6		(343)
37.45	37.00	0.45										
34.90	34.00	−0.90	0.08	2 7 46.28	32.70	2 8 18.98	33 8 29.56	5.67	32.97	5		γ Trianguli.
38.15	38.70	+0.55										
35.15	34.80	−0.35	−0.26	1 31 37.16	+ 32.80	1 32 9.96	37 29 41.48	+ 4.73	+32.85	10		Anon.
37.85	37.10	−0.75										

ASSUMED LATITUDE 38° 53′ 38″.80 NORTH.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					h. m. s.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	m. s.
Nov. 29	1	α Arietis	E.	N.	22 1 ..	54.5	7.9	21.6	28.0	35.3	42.4	S.	48.6	55.7	33.5	39.7	53.6	6.8	4 ..
	2		W.	S.	5 51 ..	29.4	43.3	56.5	2.8	10.7	17.2	N.	24.4	31.2	38.7	44.8	57.9	11.6	54 ..
	3	Bessel's Zone, 386	E.	S.	22 15 20.0	37.5	56.0	12.4	29.3	46.1	..	N.	..	31.3	49.8	6.8	24.2	42.0	20 0.5
	4		W.	N.	1 13 4.2	24.0	41.4	0.3	16.7	33.5	..	S.	..	19.3	37.0	53.5	12.5	26.2	17 45.4
	5	Bessel's Zone, 386	E.	N.	22 41 21.6	35.4	51.6	6.8	21.1	35.5	..	S.	..	8.7	22.6	39.2	54.1	12.3	45 26.0
	6		W.	S.	2 7 32.5	46.6	2.1	19.2	33.5	49.1	..	N.	..	21.4	35.4	50.2	5.3	21.6	11 36.5
	7	Lal. 47307	E.	S.	22 54 42.5	8.1	31.6	56.6	20.0	44.7	8.8	N.	51.0	20.0	43.0	10.3	35.0	2.4	61 29.6
	8		W.	N.	0 57 25.0	53.1	19.4	45.5	11.6	36.5	2.8	S.	44.0	9.7	33.4	59.5	23.0	48.2	64 12.2
	9	Bessel's Zone, 387	E.	S.	23 56 5.3	37.5	9.0	41.4	15.0	44.3	19.0	N.	38.7	17.0	48.3	26.3	5.5	39.8	65 21.6
	10		W.	N.	1 26 4.3	43.1	21.4	56.5	33.2	8.2	44.5	S.	5.4	37.4	10.6	43.6	14.4	46.3	35 19.2
	11	Lal. 3025	E.	S.	0 35 42.0	14.6	42.3	12.0	41.7	11.0	44.0	N.	43.5	14.4	45.6	18.0	48.2	19.8	43 56.5
	12		W.	N.	2 17 18.3	51.4	26.9	58.0	29.0	0.3	31.6	S.	35.3	7.9	36.8	4.7	33.5	2.2	25 31.6
	13	Anon.	E.	S.	1 53 20.4	49.8	16.0	46.5	16.2	44.2	14.8	N.	17.8	48.5	20.1	49.9	21.0	55.4	61 28.8
	14		W.	N.	3 35 43.9	18.4	49.0	18.4	52.8	22.3	56.2	S.	56.5	27.8	56.3	23.0	54.2	21.4	43 49.9
Dec. 6	15	α Lyræ	E.	N.	17 55 15.1	1.8	49.6	34.9	19.9	8.7	29.2	S.	25.0	49.1	43.5	40.2	39.9	43.1	67 54.0
	16		W.	S.	18 54 26.5	36.9	41.9	41.0	37.6	32.5	55.0	N.	51.9	12.2	59.9	46.2	30.3	17.8	67 4.9
	17	(343)	E.	S.	23 34 12.2	30.6	47.2	5.3	23.7	41.0	..	N.	..	30.8	48.5	6.3	25.4	43.7	39 3.3
	18		W.	N.	2 25 6.9	26.6	44.7	2.2	21.2	39.0	..	S.	..	29.6	46.5	4.3	22.4	39.6	29 57.7
	19	Rumker Supplement, 361	E.	N.	23 49 34.5	2.6	33.7	4.1	32.8	2.2	31.6	S.	42.7	14.3	45.8	17.3	51.3	27.5	58 0.3
	20		W.	S.	1 30 6.4	37.8	14.6	48.3	20.1	50.5	22.6	N.	34.6	5.0	32.5	2.1	32.8	4.4	38 31.5
	21	Lal. 4761	E.	N.	0 47 52.5	24.7	41.6	57.2	12.6	29.3	..	S.	..	37.3	52.7	9.2	25.2	41.7	52 15.6
	22		W.	S.	3 59 48.0	22.2	39.3	54.6	11.0	26.7	..	N.	..	35.8	51.3	7.2	22.3	38.5	64 11.5
	23	Lal. 5181	E.	S.	0 57 ..	48.1	2.8	18.7	34.1	48.7	..	N.	.	22.6	37.1	53.4	9.8	24.5	61 ..
	24		W.	N.	4 17 ..	45.5	0.8	16.8	32.6	47.7	..	S.	..	21.2	35.4	51.4	6.3	21.8	21 ..
	25	Anon.	E.	N.	1 53 19.2	45.6	16.2	46.5	14.1	43.6	..	S.	..	50.7	21.6	52.4	26.6	1.8	61 32.8
	26		W.	S.	3 35 37.4	8.3	44.8	17.2	49.2	20.4	..	N.	..	28.5	56.8	25.7	55.9	26.1	43 53.7
	27	Lal. 8455	E.	N.	2 49 30.2	46.6	4.3	22.4	39.5	55.9	12.3	S.	25.5	43.0	59.9	17.6	35.6	55.0	54 11.3
	28		W.	S.	5 49 1.2	18.3	37.5	55.6	12.2	30.4	47.8	N.	59.9	16.9	33.4	50.2	8.4	27.0	53 42.5
15	29	Lal. 1627	E.	N.	23 16 24.7	40.9	58.5	16.7	32.5	48.6	..	S.	..	37.0	53.7	10.0	29.0	47.8	21 4.1
	30		W.	S.	2 17 7.2	23.7	43.3	1.1	17.9	34.9	..	N.	..	20.8	38.0	54.0	12.0	30.6	21 46.5
	31	Bessel's Zone, 446	E.	S.	23 35 10.9	27.8	44.2	0.3	17.2	33.2	50.8	N.	58.7	15.5	31.7	49.0	5.8	22.8	39 40.1
	32		W.	N.	2 40 33.9	51.5	8.2	25.7	42.5	59.1	16.1	S.	23.5	41.0	57.6	14.2	30.4	46.5	44 3.1
	33	Bessel's Zone, 387	E.	N.	23 52 0.2	26.6	58.9	31.1	59.2	29.6	0.4	S.	13.5	46.2	18.3	51.1	25.0	2.6	60 35.5
	34		W.	S.	1 30 5.3	38.7	15.0	49.9	21.9	55.2	28.1	N.	41.0	11.5	40.2	10.7	41.9	13.6	38 41.2
	35	Bessel's Zone, 387	E.	N.	0 19 29.1	50.5	15.7	39.6	2.3	25.8	48.3	S.	28.5	51.7	16.1	40.0	6.1	32.4	25 56.0
	36		W.	S.	2 30 20.3	42.8	10.7	36.0	0.2	23.6	47.8	N.	27.8	50.5	14.0	37.3	59.9	24.5	36 46.5
	37	(772)	E.	S.	0 28 34.5	48.5	1.2	15.4	29.3	42.6	..	N.	..	6.0	19.3	33.5	47.4	0.8	32 15.9
	38		W.	N.	4 12 17.5	32.1	46.3	0.3	13.9	26.7	..	S.	..	51.3	4.6	18.4	32.3	45.6	16 0.4
	39	Lal. 4667	E.	S.	0 50 2.2	20.0	36.3	53.5	10.0	26.5	43.6	N.	51.4	9.5	26.6	43.6	0.5	18.2	54 36.3
	40		W.	N.	3 51 29.0	46.2	3.7	20.8	39.0	54.5	12.3	S.	20.3	38.6	55.5	12.1	28.8	45.6	56 1.9
	41	(1349)	E.	N.	1 56 7.2	29.8	40.7	52.6	4.1	15.6	26.5	S.	37.4	47.5	59.7	11.3	24.1	34.5	59 57.5
	42		W.	S.	6 28 11.5	34.8	45.3	57.9	10.3	21.4	32.5	N.	42.4	53.9	3.9	16.4	28.5	39.4	32 2.2

DATE.	CLOCK + AZIMUTH.	CLOCK'S HOURLY RATE.
h.	s.	s.
Nov. 29, 1	+ 34.96	0.000
Dec. 6, 1	34.93	0.000
Dec. 15, 3	+ 34.92	0.000

LEVEL READINGS.			Corr. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED.		REDUCTION TO 1850 0		Magnitude.	Observer.	OBJECTS.
Means.		Diff.				R. Ascension.	N. Declination.	R. A.	Decl.			
N.	S.	Div.	"	H. M. S.	S.	H. M. S.	° ′ ″	S.	″			
41.40	44.85	+3.45	+2.18	1 58 3.17	+ 34.91	1 58 38.08	22 44 26.26	+ 5.59	+32.68		P.	α Arietis.
43.75	49.60	5.85										
41.55	45.00	3.45	1.75	23 46 32.97	34.91	23 47 7.88	36 45 9.28	5.24	26.83	11		Bessel's Zone, 386.
42.80	46.80	4.00										
41.90	45.10	3.20	1.77	0 26 28.72	34.86	0 27 3.58	35 59 48.73	5.33	29.04	8		Bessel's Zone, 386.
43.65	48.30	4.65										
41.95	45.35	3.40	1.23	23 59 27.47	34.86	0 0 2.33	37 52 47.72	5.24	27.40	8.9		Bessel's Zone, 387.
42.50	46.65	4.15										
41.95	46.10	4.15	2.01	0 45 42.07	34.76	0 46 16.83	38 20 48.18	5.32	29.50	9		Bessel's Zone, 387.
42.50	48.00	5.50										
42.30	46.45	4.15	2.13	1 30 37.97	34.84	1 31 12.81	38 11 55.44	5.54	30.42	8		Lal. 3025.
43.70	48.60	4.90										
43.20	48.25	5.05	2.39	2 48 35.80	34.95	2 49 10.75	38 11 17.09	5.91	+29.02	11		Anonymous.
44.45	49.55	5.10										
41.20	44.00	2.80	1.24	18 31 10.38	35.01	18 31 45.39	38 39 0.39	5.69	−10.05			α Lyræ.
40.50	43.00	2.50										
40.45	43.30	2.85	1.66	1 2 5.03	34.84	1 2 39.87	36 54 38.40	5 44	+30.07	8		(343).
41.50	45.40	3.90										
40.65	43.55	2.90	1.35	0 44 3.00	34.93	0 44 37.93	38 12 45.85	5.46	29.19	10		Rumker Supl. 361.
41.45	44.30	2.85										
41.15	43.85	2.70	1.44	2 26 2.00	34.88	2 26 36.88	36 23 26.64	5.79	29.56	10		Lal. 4761.
42.05	45.50	3.45										
41.10	44.00	2.90	1.70	2 39 35.00	34.83	2 40 9.83	36 10 23.85	5.84	29.04	11		Lal. 5181.
41.60	45.95	4.35										
41.45	44.90	3.45	1.75	2 48 35.62	34.90	2 49 10.52	38 11 18.12	5.91	28.38			Anonymous.
41.85	45.55	3.70										
41.60	45.60	4.00	1.66	4 21 36.60	35.00	4 22 11.60	36 42 32.13	6.28	22.05	8		Lal. 8455.
42.45	45.50	3.05										
37.50	41.55	4.05	1.70	0 49 5.55	34.97	0 49 40.52	35 51 54.80	5.61	29.53	8.9		Anonymous.
39.80	43.10	3.30										
38.00	40.85	2.85	1.43	1 9 37.19	34.89	1 10 12.08	36 33 40.68	5.66	29.64	7.8		Bessel's Zone, 446.
40.20	43.45	3.25										
38.15	40.90	2.75	1.37	0 45 20.45	34.87	0 45 55.32	38 14 41.28	5.59	28.82	8.9		Bessel's Zone, 387.
39.05	42.15	3.10										
38.35	41.15	2.80	1.46	1 28 8.00	34.86	1 28 42.86	37 44 25.74	5.70	29.41	9		Bessel's Zone, 387.
40.00	43.40	3.40										
38.45	41.20	2.75	1.52	2 22 16.78	34.87	2 22 51.65	35 28 12.90	5.83	28.94	5.6		(772).
40.50	44.20	3.70										
38.65	41.60	2.95	1.56	2 23 2.45	34.86	2 23 37.31	36 39 40.29	5.85	28.69	9		Lal. 4667.
40.50	44.20	3.70										
39.25	42.75	3.50	+1.77	4 14 4.57	+ 34.90	4 14 39.47	33 46 17.99	+ 6.08	+21.95	6		(1349).
40.80	44.85	+4.05										

Assumed Latitude 38° 53′ 38″.80 North.

DATE. 1847.	No. for ref.	OBJECT.	Vertical.	Telescope.	TIMES OF TRANSIT OVER WIRES. A.	B.	C.	D.	E.	F.	G.	Telescope.	TIMES OF TRANSIT OVER WIRES. G.	F.	E.	D.	C.	B.	A.
					H. M. S.	s.	s.	s.	s.	s.	s.		s.	s.	s.	s.	s.	s.	M. s.
Dec. 15	1	ρ Persei	E.	S.	2 2 41.0	11.0	43.1	10.8	42.6	59.2	..	N.	..	31.5	48.9	23.2	53.4	27.7	9 2.3
	2		W.	N.	3 40 45.2	19.8	53.5	24.5	58.2	16.1	..	S.	..	48.5	5.0	37.5	6.7	36.4	47 7.7
	3	Lal. 8455	E.	S.	2 49 32.7	49.7	6.4	22.9	40.6	51.5	14.7	N.	23.6	42.3	59.0	17.0	34.2	52.2	54 10.1
	4		W.	N.	5 49 2.7	21.6	39.3	56.4	15.6	30.3	49.5	S.	57.8	16.4	32.5	50.4	6.1	23.9	53 41.0
18	5	α Lyræ	E.	N.	17 55 14.4	1.8	49.0	33.3	18.7	6.9	31.0	S.	18.6	44.5	39.6	35.8	34.6	40.5	67 50.0
	6		W.	S.	18 54 36.4	46.9	51.5	51.6	46.2	42.0	8.0	N.	56.9	20.6	7.9	54.5	39.2	26.5	67 13.7

DATE.	CLOCK. +AZIMUTH.	CLOCK'S HOURLY RATE.
h.	s.	s.
Dec. 15, 3	+ 34.92	0.000

No. for Res.	LEVEL READINGS. Means. N.	Means. S.	Diff.	Cor. for Level.	MEAN OF WIRES.	Correction in Right Ascension.	OBSERVED R. Ascension.	OBSERVED N. Declination.	REDUCTION TO 1850.0 R. A.	REDUCTION TO 1850.0 Decl.	Magnitude.	Observer.	OBJECTS.
	N.	S.	*Div.*	″	H. M. S.	S.	H. M. S.	° ′ ″	S.	″			
1	39.50	42.85	+3.35	+1.62	2 54 53.90	+ 34.89	2 55 28.79	38 14 50.99	+ 6.00	+27.05	4.5	P.	β Persei.
2	40.40	43.95	3.55										
3	40.05	43.65	3.60	1.92	4 21 36.62	+ 34.85	4 22 11.47	36 42 32.22	+ 6.21	+19.84	8		Lal., 8455.
4	40.70	45.25	4.55										
5	41.45	46.50	5.05	+2.18	18 31 13.60	. .	. . . .	38 38 55.35	. .	— 6.52			α Lyræ.
6	40.80	46.02	+5.22										

Assumed Latitude 38° 53′ 38″.80 North.

OBSERVATIONS

WITH

THE EQUATORIAL.

1847.

NATIONAL OBSERVATORY.

NEPTUNE.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.
Jan. 5	7648, B. A. C. . .	52.5	4.5	17.4	1 21 4.80	2 50.052	+ 4 56.53	+36.932
	Weisse XXI, 1220.	33.3	45.6	58.5	22 45.80	2 40.996	3 15.53	45.988
*H.	NEPTUNE . . .	48.0	1.8	14.2	26 1.33	3 57.002		
	7648, B. A. C. . .	†44.1	57.0		27 57.08	2 50.052	4 57.12	36.936
	Weisse XXI, 1220.	26.2	38.3	51.0	29 38.50	2 41.170	3 15.70	45.818
	NEPTUNE . . .	41.1	55.5	6.0	32 54.20	3 57.006		
	7648, B. A. C. . .	3.6	16.4	29.2	35 16.40	2 50.052	4 56.53	36.980
	Weisse XXI, 1220.	45.7		11.0	36 58.35	2 41.164	+ 3 14.58	45.868
	NEPTUNE . . .	0.5	12.8	25.5	40 12.93	3 57.050		
	(1)	30.3	43.1	55.7	43 43.03		— 3 30.10	
	7648, B. A. C. . .	57.8	10.8	25.1	45 11.23	2 50.052	+ 4 55.44	37.074
	Weisse XXI, 1220.	39.8	52.2	5.3	46 52.43	2 41.095	3 14.24	46.031
	NEPTUNE . . .	54.0	6.5	19.5	50 6.67	3 57.144		
	7648, B. A. C. . .	20.0	32.8	45.2	52 32.67	2 50.052	4.56.65	36.934
	Weisse XVI, 1220.	1.6	14.2	27.0	54 14.27	2 41.090	+ 3 15.05	45.896
	NEPTUNE . . .	16.5	29.3		1 57 29.32	3 57.004		
	(1)	46.4	59.1	11.9	2 0 59.13	3 52.597	— 3 29.81	4.407
	7648, B. A. C. . .	58.3	10.9	24.0	3 11.07	2 50.052	+ 4 55.97	36.873
	Weisse XXI, 1220.	40.3	53.0	5.4	4 52.90	2 40.905	+ 3 14.14	46.128
	NEPTUNE . . .	54.3	7.0	19.8	8 7.04	3 56.951		
	(1)	24.4	37.1	49.8	2 11 37.10	3 52.576	— 3 30.06	+ 4.375
Jan. 8	7648, B. A. C. . .	51.3		16.2	1 10 3.75	2 25.000	+ 5 17.30	+44.241
	Weisse XXI, 1220.	32.8		57.5	11 45.15	1 46.010	3 35.90	53.236
H.	NEPTUNE . . .	8.6		33.5	15 21.05	3 39.245		
	(1)	17.3		43.2	18 30.25	3 27.559	— 3 9.20	11.686
	7648, B. A. C. . .	28.6		54.1	20 41.35	2 25.000	+ 5 17.10	44.258
	Weisse XXI, 1220.	10.5		35.8	22 23.15	1 46.035	3 35.30	53.228
	NEPTUNE . . .	46.4		10.5	25 58.45	3 39.262		
	(1)	55.0		20.3	29 7.65	3 27.509	— 3 9.20	11.753
	7648, B. A. C. . .	6.3		31.6	31 18.95	2 25.000	+ 5 17.45	44.410
	Weisse XXI, 1220.	46.8		12.5	32 59.65	1 46.073	+ 3 36.75	53.342
	NEPTUNE . . .	23.8		49.0	36 36.40	3 39.414		
	(1)	32.1		57.5	39 44.80	3 27.613	— 3 8.40	11.801
	NEPTUNE . . .	29.2		54.5	43 41.85	3 39.972		
	(1)	38.2		3.7	46 50.95	3 28.230	3 9.10	11.742
	NEPTUNE . . .	39.9		5.5	48 52.70	3 39.972		
	(1)	48.2		14.2	52 1.20	3 28.193	3 8.50	11.779
	NEPTUNE . . .	16.3		41.6	53 28.95	3 39.972		
	(1)	24.7		50.2	56 37.45	3 28.068	3 8.50	11.904
	NEPTUNE . . .	21.1		46.1	1 58 33.60	3 39.972		
	(1)	29.2		55.0	2 1 42.10	3 28.363	— 3 8.50	+11.609
Jan. 12	7648, B. A. C. . .	33.6	46.1	59.0	1 9 46.23		+ 5 46.80	
	NEPTUNE . . .	20.3	33.0	45.8	15 33.03			
H.	7648, B. A. C. . .	14.5	26.8	39.2	19 26.83	1 38.000	+ 5 47.84	+54.561
	NEPTUNE . . .	2.0	14.8	27.2	25 14.67	3 32.456		
	(1)	41.0	53.5		27 53.55	2 40.685	— 2 38.88	+21.844
	NEPTUNE . . .	36.5	49.6	2.5	29 49.53	3 32.860		
	(1)	16.0	28.5		32 28.55	2 41.049	2 39.02	+21.884
	NEPTUNE . . .	2.5	15.0	27.2	34 14.90	2 38.242		
	(1)	41.5	54.2	6.2	36 53.96	1 46.083	2 39.06	+22.191
	NEPTUNE . . .	21.2	33.6	46.6	38 33.80	2 38.242		
	(1)	0.1	12.7	26.0	41 12.93	1 46.470	2 39.13	+21.804

Results.

Jan. 5

Corr. of Chron. m. s. —5 34.63

	App't. α h. m. s.	App't. δ ° ′ ″
7648, B. A. C. . . .	21 50 8.59	—13 23 37.55
Weisse XXI, 1220 . .	51 50.35	25 54.34
(1)	58 35.09	15 10.88

NEPTUNE—7648, B. A. C.	Δ α m. s.	Δ δ ′ ″
Sid. time 1 40 13.95	+4 56.37	+ 9 27.68
Δ ρ	.08	1.26
p	.00	.20
NEPTUNE—Weisse XXI, 1220		
Sid. time 1 40 13.95	+3 14.89	+11 45.65
Δ ρ	.09	1.49
p	.00	0.20
NEPTUNE—(1)		
Sid. time 1 57 13.55	—3 29.93	+ 1 7.45
Δ ρ	+ .01	.17
p	.00	.20

* H. Prof. Hubbard. M. Lieut. Maury.
† Recorded 34.1s. 47s.0

Jan. 8

Corr. of Chron. m. s. —5 43.73

	App't. α h. m. s.	App't. δ ° ′ ″
7648, B. A. C. . . .	21 50 8.58	—13 23 37.62
Weisse XXI, 1220 . .	51 50.33	25 54.34
(1)	58 35.07	15 10.96

NEPTUNE—7648, B. A. C.	Δ α m. s.	Δ δ ′ ″
Sid. time 1 20 14.90	+5 17.28	+11 20.53
Δ ρ	.06	1.35
p	.00	0.30
NEPTUNE—Weisse XXI, 1220		
Sid. time 1 20 14.90	+3 35.98	+13 38.29
Δ ρ	.07	1.40
p	.00	0.20
NEPTUNE—(1)		
Sid. time 1 34 38.13	—3 8.77	+ 3 0.71
Δ ρ	+ .02	.33
p	.00	.20

A new set of wires had been put into the diaphragm today. At night the middle transit wire had disappeared. Jan. 11, another set was put in.

Jan. 12

Corr. of Chron. m. s. —5 54.08

	App't. α h. m. s.	App't. δ ° ′ ″
(1)	21 58 33.07	—13 15 11.02

NEPTUNE—(1)	Δ α m. s.	Δ δ ′ ″
Sid. time 1 32 32.96	—2 38.99	+ 5 37.18
Δ ρ	+ .03	.59
p	.00	.20

(Continued.)

NEPTUNE.

ıte; 347. erver	OBJECT.	Chr. times of transit I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.	
ı. 12	NEPTUNE . . .	25.6	37.5	50.2	42 37.76	2 38.242			
H.	(1)	4.2	16.8	29.8	45 16.93	1 46.063	— 2 39.17	+22.211	
	NEPTUNE . . .		33.5	46.0	46 33.55	2 38.242			
	(1)		12.5	25.2	49 12.55	1 46.278	2 39.00	21.996	
	NEPTUNE . . .	52.5	5.2	17.2	52 4.96	2 42.260			
	(1)		43.6	56.0	54 43.65	1 50.566	2 38.69	21.726	
	NEPTUNE . . .	40.8	53.2	6.0	2 29 53.33	1 42.529			
	(1)	0.8	13.3	26.2	31 13.43	3 31.245	1 20.10	48.821	
	NEPTUNE . . .	25.2	38.3	51.2	32 38.23	1 41.665			
	(1)	46.0	59.0	11.8	33 58.93	3 30.420	1 20.70	48.860	
	NEPTUNE . . .	57.8	10.2	22.8	35 10.27	1 41.140			
	(1)	17.5	30.5	43.5	36 30.50	3 29.693	1 20.23	48.658	
	NEPTUNE . . .	45.2	57.8	10.3	38 57.76	1 40.410			
	(1)	5.5	18.5	30.8	40 18.27	3 28.870	1 20.51	48.565	
	NEPTUNE . . .	16.5	29.2	41.5	41 29.06	1 39.447			
	(1)	36.3	49.2	2.2	42 49.23	3 27.943	1 20.17	48.601	
a. 27	NEPTUNE . . .	58.3	10.8	23.5	2 58 10.87	1 39.152			
H.	(1)		50.5	3.0	58 50.50	3 40.958	0 39.63	61.911	
	NEPTUNE . . .	8.7	22.2	34.4	3 2 21.77	1 33.746			
	(1)		0.3	14.2	3 0.30	3 36.113	— 0 38.53	+62.472	

Corr. of Chron. m. s. —6 25.44

	App't α h. m. s.	App't δ ° ′ ″
(1)	21 58 35.08	—13 15 11.

NEPTUNE—(1)	Δ α m. s.	Δ δ ′ ″
Sid. time 2 29 12.29	—1 20.34	+12 28.
Δ ρ	+ .30	3.
p	.00	0.

Corr. of Chron. m. s. —6 41.31

	App't α h. m. s.	App't δ ° ′ ″
(1)	21 58 33.05	—13 15 11.

NEPTUNE—(1)	Δ α m. s.	Δ δ ′ ″
Sid. time 2 53 35.01	—0 39.23	+15 55.
Δ ρ	+ 1.18	15.
p	.00	.

eb. 4.

Professor Hubbard examined the following stars in a zone observed by Lalande, May 10, 1795. The star marked N observed by him as a fixed sta not now there.

	α H. M. S.	δ ° ′
(1)	14 10 31	— 11 52.4
(2)	10 34	11 40.7
(3)	10 36	11 21.2
(4)	12 31	11 39.7
(5)	12 58	11 8.3
(6)	13 4	10 41.6
(7)	13 58	11 6.5
(8)	14 31	11 21.5
(9)	14 32	11 34.2 N
(10)	15 12	11 0.8
(11)	15 51	11 39.0
(12)	16 28	10 58.4
(13)	18 24	10 56.1
(14)	23 2	11 11.6

This zone was examined on the 12th February, by Lieutenant Maury, and on the 22d of the same month by Professor Hubbard, the star marked N ing missing.

NEPTUNE.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.
		s.	s.	s.	h. m. s.	rev.	m. s.	revs.
Mar. 24 H.	7722, B. A. C.	16.8	29.2	42.2	17 31 29.40	2 33.648	+ 3 28.00	+ 8.138
	Neptune	44.8	57.2	10.2	34 57.40	2 25.510		
	7722, B. A. C.	8.0	20.8	33.2	36 20.67	2 35.548	3 27.50	8.368
	Neptune	35.5	48.0	1.0	39 48.17	2 27.180		
	7722, B. A. C.	43.5	55.8	9.0	41 56.10	2 36.990	3 28.10	8.031
	Neptune	11.5	24.0	37.1	45 24.20	2 28.959		
	7722, B. A. C.	27.0	39.8	52.5	46 39.77	2 38.238	3 28.06	8.142
	Neptune	55.0	8.0	20.5	50 7.83	2 30.096		
	7722, B. A. C.	11.1	23.5	36.2	51 23.60	2 39.280	+ 3 28.30	+ 8.232
	Neptune	39.2	52.0	4.5	54 51.90	2 31.048		
April 2 H.	7722, B. A. C.	16.2	29.0	41.8	17 33 29.00	2 51.450	+ 4 31.50	30.170
	Neptune	48.0	0.5	13.0	38 0.50	1 51.353		
	7722, B. A. C.	39.0	51.5	4.2	41 51.57	2 52.412	4 31.03	30.261
	Neptune	10.0	22.8	35.0	46 22.60	1 52.224		
	7722, B. A. C.	24.0	37.0	49.2	49 36.73	2 52.550	+ 4 32.00	+30.177
	Neptune*	56.2	9.0	21.0	54 8.73	1 52.446		
April 4 H.	7722, B. A. C.	56.0	9.0	22.0	17 20 9.00	2 49.316	+ 4 45.33	+34.745
	Neptune	41.8	54.0	7.2	24 54.33	1 44.603		
	7722, B. A. C.	9.2	21.8	34.5	26 21.83	2 56.122	4 45.57	34.816
	Neptune	54.8	7.2	20.2	31 7.40	1 51.338		
	7722, B. A. C.	7.2	20.0	33.0	23 20.07	2 37.830	4 45.33	34.843
	Neptune	53.0	5.2	18.0	38 5.40	1 53.019		
	7722, B. A. C.	51.2	5.0	17.5	54 4.57	2 54.964	+ 4 46.20	+34.928
	Neptune	38.2	51.0	3.1	58 50.77	1 50.068		
April 6	7722, B. A. C.	1.0	14.0	26.8	17 11 13.93	3 38.326	+ 5 0.14	+38.782
	Neptune	1.2	14.0	27.0	16 14.07	1 59.649		
	7722, B. A. C.	53.2	6.0	18.5	18 5.90	3 42.009	4 58.77	+38.960
	Weisse XXII, 123	52.0	4.5	17.2	22 4.57	1 34.600	1 0.10	—28.554
	Neptune	52.0	4.5	17.5	23 4.67	2 33.122		
	7722, B. A. C.	3.3	16.0	28.5	24 15.93	3 44.166	4 58.17	+39.338
	Weisse XXII, 123	1.2	13.8	26.5	28 13.83	1 36.565	1 0.27	—28.368
	Neptune	1.5	14.0	26.8	29 14.10	2 34.901		
	7722, B. A. C.	23.3	36.2	48.8	30 36.10	3 42.571	4 58.17	+39.187
	Weisse XXII, 123	21.5	33.8	46.5	34 33.93	1 35.173	1 0.34	—28.316
	Neptune	21.5	34.2	47.1	35 34.27	2 33.457		
	7722, B. A. C.†	40.0	52.8	5.2	37 52.67	3 42.171	4 58.00	+38.976
	Weisse XXII, 123	37.8	50.2	3.0	41 50.33	1 34.845	1 0.34	—28.455
	Neptune	37.8	51.0	3.2	42 50.67	2 33.268		
	7722, B. A. C.	22.3	35.1	48.0	45 35.13	3 43.671	4 58.64	+39.179
	Neptune	21.0	34.0	46.3	50 33.77	2 34.565		
	7722, B. A. C.	51.8	4.2	16.8	52 4.27	3 44.662	4 58.06	+39.319
	Weisse XXII, 123	50.0	2.5	15.0	56 2.50	1 37.243	0 59.83	—28.205
	Neptune	49.8	2.2	15.0	57 2.33	2 35.416		
	7722, B. A. C.		34.2	47.1	59 34.20	3 45.676	4 59.10	+39.234
	Neptune		33.3	46.0	18 4 33.30	2 36.515		
	7722, B. A. C.	30.8	43.0	55.9	18 5 43.23	3 42.245	+ 4 58.84	+39.198
	Neptune	29.2	42.0	55.0	10 42.07	2 33.120		

Results.

Mar. 24 H.

Corr. of Chron. —10 22.67

	App't. α	App't. δ
	h. m. s.	° ′ ″
7722, B. A. C.	22 2 26.24	—12 18 48.89

Neptune—7722, B. A. C.	Δ α	Δ δ
	h. m. s.	′ ″
Sid. time 17 34 39.23	+3 27.91	+2 5.68
Δ ρ	— .04	.45
p	.00	.19

April 2 H.

Corr. of Chron. 1 6.59

	App't. α.	App't. δ.
	h. m. s.	° ′ ″
7722, B. A. C.	22 2 26.41	—12 18 47.81

Neptune—7722, B. A. C.	Δ α	Δ δ
	h. m. s.	′ ″
Sid. time 17 47 17.20	+4 31.53	+ 7 43.32
Δ ρ	— .09	1.49
p		0.19

April 4 H.

Corr. of Chron. +0 59.74

	App't. α	App't. δ
	h. m. s.	° ′ ″
7722 B. A. C.	22 2 26.46	—12 18 47.55

Neptune—7722, B. A. C.	Δ α	Δ δ
	h. m. s.	′ ″
Sid. time 17 39 13.96	+4 45.61	+8 55.07
Δ ρ	— .13	2.03
p	.00	.19

* Sky hazy.

April 6

Corr. of Chron. +0 52.10

	App't. α	App't. δ
	h. m. s.	° ′ ″
7722, B. A. C.	22 2 26.50	—12 18 47.29
Weisse XXII, 123	6 24.37	1 29.15

Neptune—7772, B. A. C.	Δ α	Δ δ
	h. m. s.	′ ″
Sid. time 17 36 18.19	+4 58.66	+10 1.08
Δ ρ	— .20	2.88
p	.00	.19

Neptune—Weisse XXII, 123		
Sid. time 17 38 25.31	+1 0.18	— 7 15.94
Δ ρ	+ .12	— 1.72
p	.00	+ .19

† Recorded 30s.

NEPTUNE.

	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.
		s.	s.	s.	h. m. s.	revs.	m. s.	revs.
17	7772, B. A. C. . .	45.0	57.6	10.8	17 2 57.80	3 43.380	+ 5 4.87	+41.338
	NEPTUNE . . .	50.0	2.5	15.5	8 2.67	2 32.115		
	7772, B. A. C. . .	47.8	0.8	13.2	10 0.60	3 48.084	5 5.03	+41.127
	Weisse XXII, 123 .	46.2	59.0	11.8	*13 59.00	1 40.751	1 6.63	—26.311
	NEPTUNE . . .	53.1	5.6	18.2	15 5.63	2 37.030		
	7772, B A. C. . .	2.0	14.6	27.5	17 14.70	3 42.261	5 5.20	+41.082
	Weisse XXII, 123 .		12.5	25.2	21 12.57	1 34.907	1 7.33	—26.377
	NEPTUNE . . .	7.4	20.0	33.3	22 19.90	2 31.252		
	7772, B. A. C. . .	1.3	13.8	26.2	23 13.77	3 40.501	5 5.03	+41.259
	Weisse XXII, 123 .	59.2	11.8	24.2	27 11.73	1 32.985	1 7.07	—26.362
	NEPTUNE . . .	6.2	18.8	31.4	28 18.80	2 29.315		
	7772, B. A. C. . .	57.0	10.0	22.6	33 9.87	3 46.452	5 5.16	+41.195
	Weisse XXII, 123 .	55.2	7.2	20.8	37 7.73	1 38.884	1 7.30	—26.478
	NEPTUNE . . .	2.2	15.1	27.8	38 15.03	2 35.330		
	7772, B. A. C. . .	14.3	27.0	40.0	43 27.10	3 48.653	5 5.00	+41.333
	Weisse XXII, 123 .	12.2	25.0	37.5	47 24.90	1 40.856	1 7.20	—26.569
	NEPTUNE . . .	19.5	32.0	44.8	48 32.10	2 37.393		
	7772, B. A. C. . .	52.3	5.2	18.1	51 5.20	2 53.141	5 4.80	+41.513
	NEPTUNE . . .	57.2	10.0	22.8	56 10.00	1 41.660		
	7772, B. A. C. . .	51.5	4.0	17.0	17 58 4.17	2 54.140	5 4.86	41.556
	NEPTUNE . . .	56.3	9.0	21.8	18 3 9.03	1 42.616		
	7772, B. A. C. . .	39.0	51.2	4.0	5 51.40	2 54.821	5 4.17	41.486
	NEPTUNE . . .	43.0	55.5	8.2	10 55.57	1 43.367		
	7772, B. A. C. . .	19.0	31.1	43.8	12 31.30	2 55.485	+ 5 4.43	+41.663
	NEPTUNE . . .	23.2	35.8	48.2	17 35.73	1 43.854		
19	7722, B. A. C. . .	58.0	10.8	25.0	17 10 11.27	3 41.344	+ 5 17.16	+45.580
	Weisse XXII, 123 .		9.2	22.0	14 9.27	1 34.310	1 19.16	—21.559
	NEPTUNE . . .	15.5	28.0	41.8	15 28.43	2 25.837		
	7722, B. A. C. . .	22.5	35.5	48.2	18 35.40	3 45.685	5 16.97	+45.312
	Weisse XXII, 123 .	20.8	33.0	45.5	22 33.10	1 38.470	1 19.27	—22.008
	NEPTUNE . . .	39.8	52.3		24 52.37	2 30.446		
	7722, B. A. C. . .	42.2	55.0	7.8	32 55.00	3 50.495	5 16.86	+45.510
	Weisse XXII, 123 .	39.9	52.5	5.2	36 52.53	1 43.275	1 19.33	—21.815
	NEPTUNE . . .	59.2	12.0	24.4	38 11.86	1 65.090		
	7722, B. A. C. . .	33.5	46.3	59.0	39 46.27	3 52.160	5 17.26	+45.773
	Weisse XXII, 123 .	31.3	44.0	57.0	43 44.10	1 44.830	1 19.43	—21.662
	NEPTUNE . . .	51.0	3.4	16.2	45 3.53	2 36.460		
	7722, B. A. C. . .	11.5	24.5	37.0	48 24.33	3 50.440	5 16.27	+45.798
	Weisse XXII, 123 .	8.2	20.2	33.0	52 20.47	1 42.915	1 20.13	—21.832
	NEPTUNE . . .	28.0	40.8	53.0	53 40.60	2 34.715		
	7722, B. A. C. . .	54.5	7.2	20.4	55 7.37	3 51.372	5 16.93	+45.795
	Weisse XXII, 123 .	52.2	4.4	17.5	59 4.70	1 43.910	1 19.60	—21.772
	NEPTUNE . . .	12.2	24.2	36.5	18 0 24.30	2 35.650		
	7722, B. A. C. . .	22.6	35.2	48.0	18 2 35.26	3 52.343	5 17.41	+45.906
	Weisse, XXII, 123	20.5	33.0	46.0	6 33.16	1 44.840	1 19.51	—21.702
	NEPTUNE . . .		52.6	5.2	7 52.67	2 36.510		
	7722, B. A. C. . .	16.8	29.3	42.0	19 29.37	3 50.398	+ 5 16.70	+45.758
	NEPTUNE . . .		46.0	58.8	24 46.07	2 34.713		
11	7722, B. A. C. . .	1.3	14.0	26.8	17 26 14.03	3 61.264	+ 5 28.87	+49.668
	Weisse XXII, 123 .	59.1	11.9	24.5	30 11.83	1 53.975	1 31.07	—17.726
	NEPTUNE . . .	29.0	43.5	56.2	31 42.90	2 41.669		

Results.

Corr. of Chron. m. s. +0 48.09

	App't. α h. m. s.	App't. δ ° ′ ″
7722, B. A. C. . . .	22 2 26.53	—12 18 47.1
Weisse XXII, 123 . .	6 24.38	1 29.1

NEPTUNE—7722, B. A. C.	Δ α m. s.	Δ δ ′ ″
Sid. time 17 43 39.42	+5 4.85	+10 35.2
Δ ρ	— .15	2.2
p	.00	.1

NEPTUNE—Weisse XXII, 123		
Sid. time 17 31 19.26	+1 7.11	— 6 45.8
Δ ρ	+ .16	— 1.8
p	.00	+ .1

*The recorded wires of Weisse XXII, 123, have been increased one minute, and the micrometer readings decreased 5 revolutions.

Corr. of Chron. m. s. +0 40.74

	App't. α h. m. s.	App't. δ ° ′ ″
7722, B. A. C. . . .	22 2 26.57	—12 18 46.8
Weisse XXII, 123 . .	22 6 24.43	—12 1 28.8

NEPTUNE—7722, B. A. C.	Δ α m. s.	Δ δ ′ ″
Sid. time 17 49 20.72	+5 16.94	+11 41.6
Δ ρ	— .13	2.1
p	.00	.1

NEPTUNE—Weisse XXII, 123		
17 44 11.28	+1 19.47	— 5 34.2
Δ ρ	+ .08	— 1.1
p		+ .1

(Continued.)

NEPTUNE.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	rev.	m. s.	rev.	
April 11 H.	Weisse XXII, 123	41.8	54.2	06.3	38 54.10	2 44.696	+ 1 31.30	—17.465	
	Neptune	12.8	25.2	38.2	40 25.40	3 32.088			
									m. s.
									Corr. of Chron. +0 32.64
	7722, B. A. C.	10.4	23.0	35.5	42 22.97	3 57.678	5 29.76	+49.767	
	Weisse XXII, 123	9.3	21.2	34.0	46 21.50	1 50.273	1 31.23	—17.743	
	Neptune	40.2	52.8	5.2	47 52.73	2 37.984			
									App't. α / App't. δ
									h. m. s. / ° ′
									7722, B. A. C. 22 2 26.62 —12 1
	Weisse XXII, 123	7.2	19.4	32.3	48 19.63	1 50.745	1 31.94	—17.775	Weisse XXII, 123 6 84.47 1
	Neptune	39.0	51.5	4.2	50 51.57	2 38.488			
									Neptune—7722, B. A. C. Δ α
									Sid. time h. m. s. m. s.
	7722, B. A. C.	17.5	30.0	42.7	52 30.07	3 57.120	5 30.03	+49.821	17 46 34.55 +5 29.55 +1
	Weisse XXII, 123	15.8	28.2	41.1	56 28.37	1 49.690	1 31.73	—17.714	Δ ρ — .16 +
	Neptune	47.3	0.2	12.8	17 58 0.10	2 37.372			p .06
	Weisse XXII, 123	35.2	48.0	0.5	18 0 47.90	1 59.248	1 31.37	17.567	
	Neptune	6.8	19.2	31.8	2 19.27	2 46.783			Neptune—Weisse XXII, 123
									17 57 21.26 +1 31.49 —
	Weisse XXII, 123	3.2	15.8	28.5	9 15.83	1 57.195	1 31.60	17.625	Δ ρ + .95
	Neptune	35.0	47.2	0.1	10 47.43	2 44.788			p .00 +
	Weisse XXII, 123	35.2	48.0	0.8	11 48.00	1 57.547	1 31.57	17.608	
	Neptune	7.0	19.5	32.2	13 19.57	2 45.123			
	Weisse XXII, 123	14.8	27.6	40.3	14 27.57	1 57.753	+ 1 31.60	—17.574	
	Neptune	46.5	59.2	11.8	15 59.17	2 45.295			
Apr. 30 H.	7740, B. A. C.	12.5	25.0	37.3	17 54 24.93	1 32.238	+ 5 24.07	—33.972	
	Neptune	36.2	49.0	1.8	59 49.00	2 36.178			
									m. s.
									Corr. of Chron. —0 46.31
	7740, B. A. C.	33.0	45.5		18 2 45.52	1 33.213	5 24.30	33.961	
	Neptune	57.1	9.8		8 9.82	2 37.142			
									App't. α / App't. δ
									h. m. s. / ° ′
	7740, B. A. C.	1.8	14.5	27.2	10 14.50	1 33.957	5 24.17	34.095	7740, B. A. C. 22 4 8.02 —11 4
	Neptune	26.0	38.6	51.4	15 38.67	2 38.020			
									Neptune—7740, B. A. C. Δ α
	7740, B. A. C.	48.1	0.6	13.5	16 0.73	1 35.578	5 24.10	34.084	h. m. s. m. s.
	Neptune	12.5	24.8	37.2	21 24.83	2 39.630			Sid. time 18 17 35.81 +5 24.18 —8
									Δ ρ + .05 —
	7740, B. A. C.	24.8	37.5	50.0	23 37.43	1 35.218	5 24.40	34.029	p .00 +
	Neptune	49.2	1.8	14.5	29 1.83	2 39.215			
	7740, B. A. C.	32.0	44.5	57.1	30 44.53	1 35.617	+ 5 24.04	—34.140	
	Neptune	56.0	8.5	21.2	36 8.57	2 39.725			
May 7 H.	7740, B. A. C.	54.8	7.5	20.0	17 45 7.43	1 46.995	+ 5 49.30	—25.886	
	Neptune	44.2	56.6	9.5	51 56.73	2 42.849			
									m. s.
									Corr. of Chron. —1 13.98
	7740, B. A. C.	13.1	25.8	38.5	53 25.80	1 48.065	5 49.07	26.017	
	Neptune	2.3	14.8	27.5	59 14.87	2 44.050			
									App't. α / App't. δ
									h. m. s. / ° ′
	7740, B. A. C.	34.0	46.5	59.2	18 2 46.57	1 49.556	5 49.30	25.607	7740, B. A. C. 22 4 8.25 —11 4
	Neptune	23.5	35.8	48.3	8 35.87	2 45.131			
									Neptune—7740, B. A. C. Δ α
	7740, B. A. C.	1.5	14.2	26.8	18 10 14.17	1 50.135	5 49.40	25.857	h. m. s. m. s.
	Neptune	51.0	3.5	16.2	16 3.57	2 45.960			Sid. time 18 10 54.60 +5 49.26 —6
									Δ ρ + .05 —
	7740, B. A. C.	32.0	44.5	57.2	18 44.57	1 50.990	5 49.23	25.972	p .00 +
	Neptune	21.2	34.0	46.2	24 33.80	2 46.930			
	7740, B. A. C.	24.8	37.2	50.0	26 37.33	1 51.580	+ 5 49.30	—25.858	
	Neptune	14.1	26.6	39.2	32 26.63	2 47.406			
May 16 H.	7740, B. A. C.	23.5	36.0	48.6	17 59 36.03	2 30.554	+ 6 12.87	—18.304	
	Neptune	36.2	49.0	1.5	18 5 48.90	3 18.785			
	7740, B. A. C.	24.6	37.2	50.1	7 37.30	2 31.418	+ 6 12.96	—18.380	
	Neptune	37.8	50.2	2.8	13 50.26	2 49.798			

(Continued.)

NEPTUNE.

ate ; 347. server	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic. w.	revs.	Planet − Star. Δ α m. s.	Δ mic. revs.	Results.
		s.	s.	s.	h. m. s.					
ıy 16	7740, B. A. C. . .	13.8	26.4	39.0	18 15 26.40	2	32.095	+ 6 13.00	—18.440	Corr. of Chron. m. s. —1 49.78
H.	Neptune . . .	26.8	39.3	52.1	21 39.40	2	50.535			
										App't. α h. m. s. / App't. δ ° ′ ″
	7740, B. A. C. . .	25.5	37.9	50.4	23 37.93			6 13.10		7740, B. A. C. . . . 22 4 7.87 —11 48 52.
	Neptune . . .	38.6	51.0	3.5	29 51.03					
	7740, B. A. C. . .	55.2	7.7	20.3	33 7.73	2	33.300	6 13.10	18.490	Neptune—7740, B. A. C. / Δ α m. s. / Δ δ ′ ″
	Neptune . . .	8.2	20.8	33.5	39 20.83	2	51.790			Sid. time 18 24 55.68 / +6 13.03
	7740, B. A. C. . .	36.6	49.0	2.0	43 49.20	2	33.928	+ 6 13.17	—18.428	Δ ρ + .03
	Neptune . . .	49.8	2.3	15.0	50 2.37	2	52.356			p .00
										18 24 18.57 —4 41.
										Δ ρ —
										p +
ne 6	7740, B. A. C. . .	37.8	50.2	3.1	18 55 50.37	2	36.876	+ 6 29.83	—15.064	
H.	Neptune . . .	7.8	20.0	32.8	19 2 20.20	2	51.940			Corr. of Chron. m. s. +1 53.33
	7740, B. A. C. . .	49.0	1.3	14.1	4 1.47	2	31.460	6 29.50	15.047	
	Neptune . . .	18.9	31.2	42.8	10 30.97	2	46.507			App't. α h. m. s. / App't. δ ° ′ ″
	7740, B. A. C. . .	27.0	39.2	52.0	12 39.40	2	31.796	6 29.73	15.049	7740, B. A. C. . . . 22 4 9.16 —11 48 49.
	Neptune . . .	56.6	9.0	21.8	19 9.13	2	46.845			
	7740, B. A. C. . .	24.7	37.2	50.0	20 37.30	2	32.000	6 29.93	15.106	Neptune—7740, B. A. C. / Δ α m. s. / Δ δ ′ ″
	Neptune . . .	54.5	7.0	20.2	27 7.23	2	47.106			Sid. time 19 20 45.46 / +6 29.73 / —3 51
	7740, B. A. C. . .	31.0	43.3	56.0	28 43.43	2	32.290	+ 6 29.67	—15.027	Δ ρ + .01 —
	Neptune . . .	0.4	13.2	25.7	35 13.10	2	47.317			p .00 +
ne 11	7740, B. A. C. . .	3.2	16.0	28.5	19 33 15.90	1	51.769	+ 6 25.50	—17.126	
H.	Neptune . . .	29.0	41.2	54.0	39 41.40	1	68.895			Corr. of Chron. m. s. +1 55.62
	7740, B. A. C. . .	36.1	49.0	1.8	44 48.97	1	45.240	6 25.53	17.142	
	Neptune . . .	2.0	14.5	27.0	51 14.50	2	32.350			App't. α h. m. s. / App't. δ ° ′ ″
	7740, B. A. C. . .	41.8	54.2	7.2	53 54.40	1	45.624	6 24.97	17.400	7740, B. A. C. . . . 22 4 9.32 —11 48 48.
	Neptune . . .	6.8	19.2	32.1	20 0 19.37	2	32.992			
	7740, B. A. C. . .	5.0	17.3	30.3	20 3 17.53	1	45.854	6 25.44	17.163	Neptune—7740, B. A. C. / Δ α m. s. / Δ δ ′ ″
	Neptune . . .	30.3	43.1	55.5	9 42.97	2	32.985			Sid. time 20 1 43.11 / +6 25.33 / — 4 24.
	7740, B. A. C. . .	21.5	34.0	46.5	11 34.00	1	45.974	+ 6 25.23	—17.190	Δ ρ —
	Neptune . . .	46.7	59.0	12.0	17 59.23	2	33.132			p .00 +
y 24	7722, B. A. C. . .	59.2	11.9	24.1	20 58 11.73	2	35.385	+ 8 39.04	+41.745	
M.	Neptune . . .	37.8	51.0	3.5	21 3 50.77	1	23.781			Corr. of Chron. m. s. +2 20.94
	7722, B. A. C. . .	27.3	39.8	52.6	21 14 39.90	3	23.098	5 39.17	41.775	
	Neptune . . .	6.2	19.7	31.3	20 19.07	2	11.318			App't. α h. m. s. / App't. δ ° ′ ″
	7722, B. A. C. . .	0.3	12.8	25.8	21 26 12.97	3	28.731	5 38.43	41.634	7722, B. A. C. . . . 22 2 29.49 —12 18 30.
	Neptune . . .	38.9	51.4	3.9	31 51.40	2*	17.092			
	7722, B. A. C. . .	44.6	57.1	9.8	35 57.17	3	28.688	5 38.63	41.622	Neptune—7722, B. A. C. / Δ α m. s. / Δ δ ′ ″
	Neptune . . .	22.8	36.0	48.6	41 35.80	2*	17.061			Sid. time 21 32 15.44 / +5 38.70 / +10 40.
	7722, B. A. C. . .	49.8	2.3	14.6	46 2.23	3	28.658	+ 5 38.24	+41.676	Δ ρ .00 .
	Neptune . . .	27.8	40.8	52.8	51 40.47	2	16.974			p .00 .
g. 19	7722, B. A. C. . .	39.2	52.0	4.1	19 46 51.77	2	31.158	+ 3 5.70	—14.732	* Recorded 2 16.092 / 2 16.061
M.	Neptune . . .	45.0	57.4	10.0	49 57.47	2	45.890			
	7722, B. A. C. . .	3.4	15.8	28.4	52 15.87	2	31.210	3 5.40	14.790	
	Neptune . . .	9.0	21.0	33.8	55 21.27	2	46.000			
	7722, B. A. C. . .	22.0	34 5	46.9	20 0 34.47	2	31.320	+ 3 4.76	—14.855	
	Neptune . . .	27.0	39.2	51.5	3 39.23	2	46.175			

(Continued.)

NEPTUNE.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.	
Aug. 19	7722, B. A. C. . .	3.2	16.0	28.2	20 7 15.80	2 31 420	+ 3 4.73	—14.852	Corr. of Chron. +3 2.88
M.	Neptune . . .	8.0	20.6	33.0	10 20.53	2 46.272			
									App't. α h. m. s. / App't. δ ° ′ ″
	7722, B. A. C. . .	48.1	0.8	13.6	13 0.83	2 31.462	3 5.50	14.868	7722, B. A. C. . . . 22 2 29.83 —12 18 26.37
	Neptune . . .	53.8	6.2	19.0	16 6.33	2 46.330			
	7722, B. A. C. . .	8.8	21.5	34.0	24 21.43	2 31.590	+ 3 4.40	—14.950	Neptune—7722, B. A. C. Δ α h. m. s. / Δ δ ′ ″
	Neptune . . .	13.4	25.9	38.2	27 25.83	2 46 540			Sid. time 20 10 11.33 +3 5.08 / — 3 47.37
									Δ ρ + .01 / — .18
									ρ .00 / + .32
1848.									
Jan. 17	7722, B. A. C. . .	37.0	49.2	1.8	1 35 49.33	1 35.721	+ 2 24.77	—27.018	
	Neptune . . .	1.5	14.2	26.6	38 14.10	2 32.598			
									m. s.
	7722, B. A. C. . .	43.6	56.0	8.1	39 55.90	1 35.524	2 24.53	26.815	Corr. of Chron. +4 11.43
	Neptune . . .	8.0	20.5	32.8	42 20.43	2 32.198			
									App't. α h. m s. / App't. δ ° ′ ″
	7722, B. A. C. . .	30.0	42.4	55.1	43 42.50	1 44.744	2 24.73	26.847	7722, B. A. C. 22 2 28.57 —12 18 35.36
	Neptune . . .	54.4	7.2	20.1	46 7.23	2 41.450			
	7722, B. A. C. . .	14.5	27.0	40.3	47 27.26	1 44.452	2 25.21	26.843	Neptune—7722, B. A. C. Δ α h. m. s. / Δ δ ′ ″
	Neptune . . .	40.0	52.4	5.0	49 52.47	2 41.154			1 52 13.21 +2 24.64 / —6 52.29
									Δ ρ + .05 / — .84
	7722, B. A. C. . .	54.0	6.7	19.3	51 6.67	1 38.891	2 24.66	26.765	ρ .00 / + .19
	Neptune . . .	18.8	31.0	44.2	53 31.33	2 35.515			
	7722, B. A. C. . .	27.8	40.0	52.8	55 40.20	1 38.545	+ 2 24.97	—26.754	
	Neptune . . .	52.6	5 1	7.8	58 5.17	2 35.158			

ASTRÆA.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.
Feb. 1 H.	28320, Lal.	22.5	35.2	48.0	12 54 35.23		+ 1 54.97	
	Astræa	17.8	36.0	42.8	56 30.20			
	28320, Lal.	35.5	48.2	1.0	12 57 48.23	3 38.310	1 55.60	+ 2.170
	Astræa	31.3	44.0	56.2	59 43.83	3 40.480		
	28320, Lal.	56.0	8.2	20.2	13 16 8.13	3 37.742	1 55.64	2.001
	Astræa	51.3	3.5	16.5	18 3.77	3 39.743		
	28320, Lal.		11.8	24.2	36 11.80	3 37.640	1 57.20	1.816
	Astræa		9.0	22.0	38 9.00	3 39.456		
	28320, Lal.	20.0	32.8	44.2	41 32.33	3 37.698	1 57.67	1.699
	Astræa	17.2	30.0	42.8	43 30.00	3 39.397		
	28320, Lal.	6.2	18.8	31.3	54 18.77	3 39.189	1 57.50	1.346
	Astræa	3.8	16.0	29.0	56 16.27	3 40.535		
	28320, Lal	53.2	6.9	18.0	13 58 5.73	3 39.098	1 58.60	1.388
	Astræa	51.8	4.2	17.0	14 0 4.33	3 40.486		
	38320, Lal.	49.5	2.2	14.8	13 2.17	3 38.821	+ 1 59.20	+ 1.404
	Astræa	48.8	1.5	13.8	15 1.37	3 40.225		
Feb. 12 H.	Astræa				12 50 23.0			
	Weisse XV, 789				34.5		— 0 11.5	
	Astræa				51 3.8			
	Weisse XV, 789				15.8		0 12.0	
	Astræa				51 36.5			
	Weisse XV, 789				48.2		0 11.7	
	Astræa				52 8.2			
	Weisse XV, 789				20.2		0 12.0	
	Astræa				52 38.4			
	Weisse XV, 789				50.7		0 12.3	
	Astræa				53 13.5			
	Weisse XV, 789				26.0		0 12.5	
	Astræa				54 7.2			
	Weisse XV, 789				20.0		— 0 12.8	
	Astræa				12 56.00	35.956		
	Weisse XV, 789					38.413		+ 2.457
	Astræa				56.48	35.786		
	Weisse XV, 789					38.452		2.666
	Astræa				57.40	35.910		
	Weisse XV, 789					38.500		2.590
	Astræa				58.32	35.782		
	Weisse XV, 789					38.510		2.728
	Astræa				59.26	25.933		
	Weisse XV, 788					38.625		2.692
	Astræa				13 0.20	35.778		
	Weisse XV, 789					38.553		2.775
	Astræa				1.14	36.033		
	Weisse XV, 789					38.742		2.709
	Astræa				3.28	35.852		
	Weisse XV, 789					38.703		2.855
	Astræa				4.23	35.806		
	Weisse XV, 789					38.833		3.027

Results.

m. s.
Corr. of Chron. —6 58.65

	App't. α	App't. δ
	h. m. s.	° ′ ″
28320, Lal.	15 25 32.86	—13 42 31.

Astræa—28320, Lal.

	Δ α
	m. s.
Sid. time 13 28 53.20	+1 57.05
Δ ρ	.00
p	— .08

	Δ δ
	′ ″
Sid. time 13 34 34.07	+00 25.
Δ ρ	′
p	2.

m. s.
Corr. of Chron. —7 41.89

	App't. α	App't. δ
	h. m. s.	° ′ ″
Weisse XV, 789	15 41 2.71	—14 3 58.

Astræa—Weisse XV, 789

	Δ α
	m. s.
Sid. time 12 44 28.19	—0 12.11
Δ ρ	.00
p	— .13

	Δ δ
	′ ″
Sid time 12 52 40.81	+ 0 42.5
Δ ρ	′
p	2.

Sid. time 13 1 15.23	—0 11.10
Δ ρ	.00
p	.12

Sid. time 13 4 44.78	+ 0 46.
Δ ρ	′
p	2.

* In these comparisons all the transits were made on wire I

ASTRÆA.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.	
Feb. 12 H.	Astræa				13 5 56.0	35.782			
	Weisse XV, 789					38.800		+ 3.018	
	Astræa				7 38.3				
	Weisse XV, 789				49.2		— 0 10.9		
	Astræa				8 19.2				
	Weisse XV, 789				30.5		0 11.3		
	Astræa				8 56.0				
	Weisse XV, 789				7.0		0 11.0		
	Astræa				9 31.0				
	Weisse XV, 789				42.2		0 11.2		
	Astræa				10 21.2				
	Weisse XV, 789				32.3		— 0 11.1		
	Astræa				13 11.20	35.104			
	Weisse XV, 789					38.048		+ 2.944	
	Astræa				12.16	35.088			
	Weisse XV, 789					38.080		2.992	
	Astræa				13.44	35.107			
	Weisse XV, 789					38.183		+ 3.076	
April 6 H.	Astræa	22.8	35.2	48.0	14 52 35.33	1 64.013			
	Weisse XVI, 173	18.2	31.1	43.3	54 50.87	2 40.063	— 1 55.54	+ 6.082	
	Astræa	55.8	8.2	21.2	56 8.40	2 34.393			
	Weisse XVI, 173	52.5	5.0	17.8	58 5.10	2 40.524	1 56.70	6.131	
	Astræa	16.6	29.0	41.5	59 29.03	2 *34.549			
	Weisse XVI, 173	12.5	25.3	38.2	1 25.33	2 40.510	1 56.30	5.961	
	Astræa	19.0	31.0	43.5	15 2 31.16	2 34.938			
	Weisse XVI, 173	15.2	27.8	40.3	4 27.77	2 41.372	1 56.61	6.434	
	Astræa	58.2	10.5	23.2	8 10.63	2 35.086			
	Weisse XVI, 173	54.2	6.8	19.5	10 6.83	2 41.400	1 56.20	6.314	
	Astræa	32.3		57.8	12 45.05	2 27.482			
	Weisse XVI, 176	38.5		3.8	14 51.15	3 20.590	2 6.10	23.181	
	Astræa	10 0	22.5	35.3	18 22.60	2 27.820			
	Weisse XVI, 176	16.0	28.8	41.1	20 28.63	3 20.925	2 6.03	23.178	
	Astræa	37.0	49.3	2.0	21 49.43	2 45.889			
	Weisse XVI, 176	43.0	55.5	8.2	23 55.57	3 39.085	2 6.95	23.269	
	Astræa	26.0	38.2	51.3	25 38.50	2 30.060			
	Weisse XVI, 176	31.4	44.0	56.7	27 44.03	3 23.137	2 5.53	23.150	
	Astræa	30.5	42.8	55.3	29 42.87	2 29.886			
	Weisse XVI, 176	36.0	49.0	1.2	31 48.73	3 23.075	— 2 5.86	+23.262	
April 7 H.	Astræa	22.0	34.8	47.2	13 40 34.67	1 51.260			
	Weisse XVI, 173	32.8	45.2	58.0	42 45.33	2 39.728	— 2 10.66	+18.500	
	*Astræa		53.0	5.6	50 53.00	1 56.688			
	Weisse XVI, 173		3.2	16.1	53 3.20	2 45.326	2 10.20	18.670	
	Astræa	35.0	47.2	59.0	54 47.07	1 53.151			
	Weisse XVI, 173	45.0	57.2	10.3	56 57.50	2 41.950	2 10.43	18.731	
	Astræa	52.5	5.0	18.0	59 5.17	1 53.423			
	Weisse XVI, 173	3.2	15.8	28.2	14 1 15.73	2 42.126	2 10.56	18.735	

Corr. of Chron. +51.63 s.

	App't α h. m. s.	App δ °
Weisse XVI, 173	16 9 19.48	—12 5
Weisse XVI, 176	9 28.82	—13

Astræa—Weisse XVI, 173 — Δ α. m. s.

Sid. time 15 0 38.54 — —1 56.27 — +1

Δ ρ — .00

ρ — .08

Astræa—Weisse XVI, 176

Sid. time 15 22 31.32 — —2 5.93 — +

Δ ρ — .00

ρ — .05

* Recorded 37.

* Sky hazy.

(Continued.)

ASTRÆA.

ate; 847. erver	OBJECT.	Chr. times of transit. I.	II.	III.	Mean	Mic. w.	revs.	Planet—Star. Δ α m. s.	Δ mic. revs.	Results.
		s.	s.	s.	h. m. s.					
pril 7	ASTRÆA	20.5	33.0	45.5	14 4 33.00	1	53.400			s.
H.	Weisse XVI, 176 .	41.0	53.3	6.2	6 53.50	2	59.121	— 2 20.50	+35.753	Corr. of Chron. +48.39
	ASTRÆA	33.3	45.8	58.2	8 45.77	1	42.093			App't. α h. m. s. / App't. δ ° ′ ″
	Weisse XVI, 176 .	53.5	6.2	19.2	11 6.30	2	47.918	2 20.53	35.837	Weisse XVI, 173 . . 16 9 19.51 —12 59 23.
	ASTRÆA	29.3	41.5	53.5	13 41.43	1	42.183			Weisse XVI, 176 . . 9 28.83 —13 3 44.
	Weisse XVI, 176 .	48.2	1.0	13.8	16 1.00	2	47.976	2 19.57	35.825	ASTRÆA—Weisse XVI, 173 Δ α. / Δ δ.
	ASTRÆA	38.0	50.2	2.3	19 50.17	1	48.208			h. m. s. / m. s. / ′ ″
	Weisse XVI, 176 .	58.0	10.1	23.3	22 10.47	2	53.967	2 20.30	35.791	Sid. time 14 8 12.04 —2 10 74 +4 48.
										Δ ρ .01 .
										p .12 — 3.
	ASTRÆA		17.7	30.2	24 17.70	1	45.875			
	Weisse XVI, 176 .		37.8	50.2	26 37.08	2	51.750	2 20.10	35.907	ASTRÆA—Weisse XVI, 176
	ASTRÆA	29.0	41.0		30 41.00	1	50.910			Sid. time 14 18 33.42 —2 20.33 +9 10.
	Weisse XVI, 176 .	49.1	2.0		33 2.00	2	56.718	2 21.00	35.840	Δ ρ .01 .
										p — .12 — 3.
	ASTRÆA	44.0	56.5	9.0	36 56.50	1	53.577			
	Weisse XVI, 173 .	55.2	7.8	20.5	39 7.83	2	42.556	2 11.33	19.011	
	†ASTRÆA	53.0	5.2	18.2	42 5.47	1	49.802			† Thick haze.
	Weisse XVI, 173 .	4.0	16.7	24.5	44 16.73	2	38.913	— 2 11.26	+19.143	
pril 9	ASTRÆA	45.0	57.0	10.0	15 26 57.32	1	58.300			
H.	Weisse XVI, 173 .	31.2	44.0	57.2	29 44.13	3	44.766	— 2 46.80	+46.571	s.
	ASTRÆA	9.0	21.5	34.0	33 21.50	1	50.588			Corr. of Chron. +40.23
	Weisse XVI, 173 .	56.0	8.2	21.2	36 8.47	3	37.146	2 46.97	46.663	App't. α h. m. s. / App't. ° ′ ″
	ASTRÆA	50.5	2.5	15.0	38 2.67	1	50.586			Weisse XVI, 173 16 9 19.55 —12 59 23.
	Weisse XVI, 173 .	37.5	50.3	3.0	41 50.27	3	37.044	2 47.60	46.563	ASTRÆA—Weisse XVI, 173 Δ α / Δ δ
	ASTRÆA	29.5	42.5	55.0	43 42.33	1	55.002			h. m. s. / m. s. / ′ ″
	Weisse XVI, 173 .	15.2	29.0	41.8	46 28.67	3	41.450	2 46.34	46.553	Sid. time 15 47 18.09 —2 47.11 +11 56.
	ASTRÆA	43.3	56.6	9.2	47 56.37	1	54.890			Δ ρ .00 .
	Weisse XVI, 173 .	30.8	43.0	55.8	50 43.20	3	41.384	2 46.83	46.599	p .32 4.
	ASTRÆA	38.2	51.2	4.0	16 14 51.13	1	60.429			
	Weisse XVI, 173 .	26.5	39.2	52.0	17 39.23	3	47.140	— 2 48.10	+46.816	
pril 11	Weisse XVI, 83 .	47.2	59.8	12.2	14 58 59.73	1	58.133	+ 0 41.43	— 8.245	
H.	ASTRÆA	29.0	41.0	53.5	59 41.16	1	66.378			
	Weisse XVI, 121 .		28.2	41.0	15 0 28.20	2	73.710	— 0 47.04	+37.364	
	Weisse XVI, 83 .	36.2	49.0	2.0	2 49.07	1	53.480	+ 0 41.83	— 8.176	
	ASTRÆA	18.5	31.0	43.2	3 30.90	1	61.656			
	Weisse XVI, 121 .		17.8	30.8	4 17.80	2	69.162	— 0 46.90	+37.538	
	Weisse XVI, 83 .	45.2	57.6	10.6	5 57.80	1	53.353	+ 0 41.67	— 8.092	s.
	ASTRÆA	27.0	39.2	52.2	6 39.47	1	61.545			Corr. of Chron. +31.20
	Weisse XVI, 121 .	13.5	26.2	39.0	7 26.23	2	68.589	— 0 46.76	+37.176	App't. α h. m. s. / App't. ° ′
	Weisse XVI, 83 .	22.2	34.7	47.3	9 34.73	1	53.270	+ 0 41.17	— 8.038	Weisse XVI, 83 16 5 8.80 —12 38 23.
	ASTRÆA	3.5	16.0	28.2	10 15.90	1	61.308			121 6 38.13 50 5.
	Weisse XVI, 121 .	50.5	3.0	15.2	11 2.90	2	68.948	— 0 47.00	+37.672	
	Weisse XVI, 83 .	7.2	19.8	32.7	12 19.90	1	53.238	+ 0 41.57	— 8.173	ASTRÆA—Weisse XVI, 83 Δ α / Δ
	ASTRÆA	49.0	1.2	14.2	13 1.47	1	61.411			h. m. s. / m. s. / ′ ″
	Weisse XVI, 121 .	36.2	49.0	1.8	13 49.00	2	68.958	— 0 47.53	+37.579	Sid. time 15 11 40.89 +0 41.49 —2 4.
										Δ ρ .00 — .
										p .05 + 4.
	Weisse XVI, 83 .	31.5	44.2	57.0	16 44.23	1	53.330	+ 0 41.34	— 8.101	
	ASTRÆA	13.2	25.5	38.0	17 25.57	1	61.431			
	Weisse XVI, 121 .	0.5	13.0	25.2	18 12.90	2	68.968	— 0 47.33	+37.569	
	Weisse XVI, 83 .	39.5	51.8	4.5	15 27 51.93	1	53.135	+ 0 41.40	— 8.108	
	ASTRÆA	20.8	32.2	46.0	27 33.33	1	61.243			
	Weisse XVI, 121 .	8.2	21.0	33.0	28 20.73	2	68.880	— 0 47.40	+37.669	

(Continued.)

ASTRÆA.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	revs.	m. s.	revs.	
April 11	Weisse XVI, 121	10.3	23.0	35.8	15 31 23.03	1 64.402	+ 2 41.54	−36.294	Astræa—Weisse XVI, 83 Δ α
	Weisse XVI, 173	52.0	4.5	17.2	34 4.57	2 70.664			h. m. s. m. s. ′
H.									Sid. time 16 43 7.13 +0 39.89 −1
	Weisse XVI, 121	18.5	31.0	44.0	35 31.17	1 64.423	4 41.83	36.277	Δ ρ .00 —
	Weisse XVI, 173	0.5	12.8	25.7	38 13.00	2 70.668			p .03 +
	Weisse XVI, 121	26.5	39.0	51.8	39 39.10	1 64.409	2 41.90	36.212	Astræa—Weisse XVI, 121
	Weisse XVI, 173	8.5	21.0	33.5	42 21.00	2 70.589			15 11 40.89 −0 47.14 +
									Δ ρ .00
	Weisse XVI, 121	40.3	53.0	5.6	44 52.97	1 64.888	2 41.76	36.244	p .08
	Weisse XVI, 173	22.2	34.8	47.2	47 34.73	2 71.100			
									16 43 7.13 −0 48.71 +
	Weisse XVI, 121	35.2	48.2	0.8	49 48.07	1 64.830	2 40.93	36.248	Δ ρ .00
	Weisse XVI, 173	16.2	29.0	41.8	52 29.00	2 71.046			p — .03
	Weisse XVI, 121	43.0	55.5	8.2	56 55.57	1 64.736	2 41.43	36.251	
	Weisse XVI, 173	24.2	37.0	49.8	59 37.00	2 70.955			
	Weisse XVI, 121	13.5	26.5	39.3	16 1 26.43	1 65.664	2 41.04	36.338	
	Weisse XVI, 173	54.8	7.5	20.6	4 7.47	2 71.970			
	Weisse XVI, 83	18.3	31.0	43.5	40 30.93	1 61.250	+ 0 39.74	− 7.270	
	Astræa	58.0	10.8	23.2	41 10.67	1 64.520			
	Weisse XVI, 121	46.8		12.2	41 59.50	2 71.913	− 0 48.83	+38.425	
	Weisse XVI, 83	8.5	21.2	33.8	43 21.16	1 61.182	+ 0 40.04	− 7.328	
	Astræa	49.0	1.0	13.6	44 1.20	1 64.510			
	Weisse XVI, 121	37.2	50.0	2.2	44 49.80	2 71.853	− 0 48.60	+38.375	
April 14	Astræa	48.2	1.0	13.0	13 30 0.73	2 16.106			s.
	Weisse XVI, 83		33.2	45.5	30 33.20	3 19.414	+ 0 32.47	+33.381	Corr. of Chron. +18.24
H.									
	Astræa	2.1	14.2		32 14.20	2 16.235			App't. α App
	Weisse XVI, 83	34.0	46.0	59.0	32 46.33	3 19.580	0 32.13	33.418	h. m. s ° ′
									5351, B. A. C. 15 59 9.10 −12 19
	Astræa	18.0	29.5	42.0	34 29.83	2 16.262			Weisse XVI, 83 16 5 8.86 38
	Weisse XVI, 83		2.0	14.0	35 2.00	3 19.596	0 32.17	33.407	29414, Lal. 1 24.57 28
	Astræa	59.0	51.5	3.5	36 51.33	2 16.342			Astræa—5351, B. A. C. Δ α
	Weisse XVI, 83		23.2	36.2	37 23.20	3 19.709	0 31.87	+33.440	h. m. s. m. s. ′
									Sid. time 14 7 52.11 +5 25.55 − 9
	5351, B. A. C.	34.7	47.0	59.9	46 47.20	1 37.840	5 25.55	−39.015	Δ ρ + .01 —
	Astræa	0.3		25.2	52 12.75	2 46.823			p — .12 +
	5351, B. A. C.	54.5	7.2	20.2	54 7.30	1 38.020	5 26.20		Astræa—Weisse XVI, 83
	29414, Lal.	10.3	23.0	35.2	56 22.83	2 42.848	3 10.67		Sid. time 13 34 14.92 −0 32.16 + 8
	Astræa			46.0	59 33.50				Δ ρ .02
									p .18
	5351, B. A. C.	33.2	46.0	58.2	14 1 45.80	1 38.138	5 25.16	38.936	
	29414, Lal.	48.5	1.2	14.0	4 1.23	2 43.040	3 9.73	4.002	Astræa—29414, Lal.
	Astræa	58.2	11.2	23.5	7 10.96	2 47.042			14 14 24.00 +3 10.01 − 3
									Δ ρ .00 —
	29414, Lal,	26.2	38.8	51.2	8 38.73	2 43.132	3 10.20	3.908	p — .13 +
	Astræa	36.2	49.0	1.6	11 48.93	2 47.040			
	5351, B A. C.	39.5	52.0	5.0	17 52.17	1 38.883	5 25.93	38.699	
	29414, Lal.	55.2	8.0	20.8	20 8.00	2 43.780	3 10.10	3.770	
	Astræa	5.5	18.0	30.8	23 18.10	2 47.550			
	5351, B. A. C.	0.3	12.8	25.2	27 12.77	1 39.018			
	29414, Lal.	15.5	28.2	41.0	29 28.23	2 43.644			
April 15	5351, B. A. C.	22.0	34.2	47.2	13 43 34.47	1 51.970	+ 4 58.10	−24.546	
	29414, Lal.	37.6	50.1	2.4	45 50.03	2 56.769	2 42.54	+10.285	
H.	Astræa	20.0	32.5	45.2	48 32.57	2 46.484			
	5351, B. A. C.	23.8	36.2	49.0	51 36.33	1 52.200	4 57.70	−24.418	
	29414, Lal.	39.6	52.0	4.5	53 52.03	2 57.085	2 42.00	+10.499	
	Astræa	21.8	34.0	46.3	56 34.03	2 46.586			

(Continued.)

ASTRÆA.

OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.
	s.	s.	s.	h. m. s.	rev. revs.	m. s.	revs.
5351, B. A C. . .	1.3	14.0	26.5	14 20 13.93	1 31.614	+ 4 57.30	—24.220
29414, Lal. . . .	17.0	29.2	42.0	22 29.40	2 36.490	2 41.83	+10.688
Astræa	58.8	11.1	23.8	25 11.23	2 25.802		
Weisse XVI, 83 .	0.8	13.4	26.2	26 13.47			
5351, B. A. C. . .	44.2	56.8	9.2	30 56.73	1 26.508	4 57.10	—23.998
29414, Lal. . . .	59.8	12.2	24.7	33 12.23	2 31.334	2 41.60	+10.860
Astræa	41.5	54*0	6*0	35 53.83	2 20.474		
Weisse XVI, 83 .	43.5	56.2	9.0	36 56.23			
5351, B. A. C. . .	18.2	31.2	43.2	42 30.87	1 26.561	4 56.23	—23.864
29414, Lal. . . .	33.2	46.0	58.4	44 45.87	2 31.330	2 41.23	+10.937
Astræa	14.5	27.3	39.5	47 27.10	2 20.393		
Weisse XVI, 83 .	16.3	29.2	41.8	48 29.10	3 38.917		
Weisse XVI, 83 .	0.8	13.2	26.2	50 13.40	1 39.710	1 29.37	—45.763
Weisse XVI, 121 .	30.3	42.8	55.2	51 42.77	3 25.368		
Weisse XVI, 83 .	17.2	29.8	42.1	53 29.70	1 39.732	1 29.23	45.747
Weisse XVI, 121 .	46.0	59.2	11.6	54 58.93	3 25.374		
Weisse XVI, 83 .	25.3	38.0	50.5	55 37.93	1 39.743	1 29.50	45.742
Weisse XVI, 121 .	54.8	7.3	20.2	57 7.43	3 25.380		
Weisse XVI, 121 .	34.0	46.2	59.2	15 6 46.47	1 39.549	2 41.60	36.239
Weisse XVI, 173 .	15.2	28.0	41.0	9 28.07	2 45.756		
Weisse XVI, 121 .	16.5	29.2	42.2	11 29.30	1 39.530	2 41.50	36.264
Weisse XVI, 173 .	58.2	11.0	23.2	14 10.80	2 45.762		
Weisse XVI, 121 .	46.5	59.2	11.8†	15 59.17	1 39.510	2 41.46	36.245
Weisse XIV, 173 .	28.2	40.5	53.2	18 40.63	2 45.723		
Weisse VIV, 173 .	20.8	33.0	46.0	20 33.27	2 34.884	0 9.06	47.022
Weisse XIV, 176 .	30.0	42.0	55.0	20 42.33	3 51.833		
Weisse XIV, 173 .	39.2	52.0	4.0	22 51.73	2 34.884	0 9.17	47.117
Weisse XIV, 176 .	48.2	1.2	13.3	23 0.90	3 51.928		
Weisse XVI, 173 .	25.8	38.2	51.0	24 38.33	2 34.884	0 9.14	+46.958
Weisse XVI, 176 .	35.0	47.2	0.2	24 47.47	3 51.769		
Weisse XVI, 173 .	54.5	7.0	19.0	26 6.83	2 34.884	0 8.77	—47.068
Weisse XVI, 176 .	3.5	15.2	28.1	26 15.60	3 51.872		
Weisse XVI, 173 .	13.0	25.2	38.1	29 25.43	2 34.854	0 9.34	+47.040
Weisse XVI, 176 .	22.1	35.0	47.2	29 34.77	3 51.821		
5351, B. A. C. . .	22.3	35.0	47.2	37 34.83	1 25.960	4 54.74	—23.490
29414, Lal. . . .	37.7	50.6	2.8	39 50.37	2 30.928	+ 2 39.20	+11.510
Astræa	16.5	30.0	42.2	42 29.57	2 19.418		
Weisse XVI, 83 .	20.4	33.0	46.0	43 33.13	3 38.370	— 1 3.56	+49.025
5351, B. A. C. . .	56.7	9.0	21.0	45 8.90	1 25.946	+ 4 55.37	—23.371
29414, Lal. . . .	12.2	24.8	37.6	47 24.87	2 30.870	+ 2 39.40	+11.585
Astræa	51.6	4.2	17.0	50 4.27	2 19.285		
Weisse XVI, 83 .	55.2	8.0	20.8	51 8.00	3 38.432	— 1 3.73	+49.220
5351, B. A. C. . .	48.0	1.0	13.2	16 1 0.73	1 25.898	+ 4 54.47	—23.144
29414, Lal. . . .	3.2	16.2	28.2	3 15.87	2 30.853	+ 2 39.33	+11.843
Astræa	42.6	55.2		5 55.20	2 19.010		
Weisse XVI, 83 .	46.2	59.0	11.2	4 58.80	3 38.382	— 1 3.60	+49.445
5351, B. A. C. . .	26.8	39.2	51.5	10 39.17	1 23.780	+ 4 54.73	—23.084
29414, Lal. . . .	42.2	54.8	7.2	12 54.73	2 28.670	+ 2 39.17	+11.838
Astræa	21.5	34.0	46.2	15 33.90	2 16.832		
Weisse XVI, 83 .	25.2	38.2	50.5	16 37.97	3 36.201	— 1 4.07	+49.442
5351, B. A. C. . .	30.0	42.2	55.0	18 42.40	1 43.465	+ 4 54.87	—23.026
29414, Lal. . . .	45.3	58.0	10.8	20 58.03	2 48.355	+ 2 39.24	+11.896
Astræa	24.6	37.0	50.2	23 37.27	2 36.459		

Results.

Corr. of Chron. +15.67 s.

	App't. α h. m. s.	App't. δ ° ′ ″
5351, B. A. C. . . .	15 59 9.12	—12 19 44.78
29414, Lal.	16 1 24.59	28 41.09
Weisse XVI, 83 . . .	5 8.88	38 23.69

Astræa—5351, B. A. C.	Δ α m. s.	Δ δ ′ ″
Sid. time 14 18 59.42	+4 57.29	— 6 11.87
Δ ρ	.00	— .31
p	— .13	+ 3.99
Sid. time 16 3 47.71	+4 54.84	— 5 56.73
Δ ρ	.00	— 25
p	— .00	+ 4.09

Astræa—29414, Lal.		
Sid. time 14 18 59.42	+2 41.84	+ 2 43.65
Δ ρ	.00	+ .13
p	— .13	+ 4.01
Sid. time 16 3 47.71	+2 39.27	+ 3 0.25
Δ ρ	.00	+ .15
p	.00	+ 4.09

Astræa—Weisse XVI, 83		
Sid. time 15 58 46.41	—1 3.74	+12 37.03
Δ ρ	.00	+ .54
p	.00	+ 4.09

* Recorded 4s. and 16s.
† Recorded 1.8.

ASTRÆA.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.
Apr. 16	5351, B. A. C. . .	48.8	1.2	14.0	14 40 1.33	1 40.786	+ 4 25.93	— 9.435
	29414, Lal. . . .	4.0	16.6	29.3	42 16.63	2 45.700	2 10.63	+25.512
H.	Astræa	14.6	27.2	40.0	44 27.26	1 50.221		
	5351, B. A. C. . .	4.8	17.2	30.1	47 17.37	1 33.943	4 25.63	— 9.250
	29414, Lal. . . .	20.2	32.8	45.2	49 32.73	2 38.979	2 10.27	+25.818
	Astræa	30.5	43.1	55.5	51 43.00	1 43.193		
	5351, B. A. C. . .	16.2	28.5	41.5	55 28.73	1 33.863	4 26.04	— 9.308
	29414, Lal. . . .	31.8	44.2	56.8	57 44.27	2 38.760	2 10.50	+25.621
	Astræa	42.3	54.8	7.2	59 54.77	1 43.171		
	29414, Lal. . . .	42.0	55.0	57.1	15 2 54.57	2 26.518	+ 2 10.13	25.775
	Astræa	52.2	5.0	17.5	5 4.90	1 30.775		
	Weisse XVI, 83 .	25.0	37.2	50.0	6 37.40	3 33.985	— 1 32.50	63.315
	29414, Lal. . . .	10.4	22.8	35.2	7 22.80	2 26.490	+ 2 10.10	25.781
	Astræa	20.5	33.0	45.2	9 32.90	1 30.741		
	Weisse XVI, 83 .	53.5	6.2	18.5	11 6.07	3 33.968	— 1 33.17	63.332
	29414, Lal. . . .	20.3	33.2	46.0	14 33.17	2 26.509	+ 2 10.16	25.862
	Astræa	31.0	43.2	55.8	16 43.33	1 30.679		
	Weisse XVI, 83 .	4.8	16.8	29.2	18 16.93	3 34.020	— 1 33.60	63.446
	29414, Lal. . . .	12.1	24.3	37.2	26 24.53	2 26.476	+ 2 9.90	25.944
	Astræa	22.0	34.3	47.0	28 34.43	1 30.564		
	Weisse XVI, 83 .	55.5	8.2	20.8*	30 8.17	3 33.990	— 1 33.74	63.531
	29414, Lal. . . .	29.3	42.0	54.5	31 41.93	2 26.388	+ 2 10.07	25.977
	Astræa	39.8	52.0	4.2	33 52.00	1 30.443		
	Weisse XVI, 83 .	13.5	26.0	38.0	35 25.83	3 34.076	— 1 33.83	63.738
	29414, Lal. . . .	18.8	31.0	44.0	38 31.27	2 26.450	+ 2 9.56	26.121
	Astræa	28.3	41.0	53.2	40 40.83	1 30.361		
	Weisse XVI, 83 .	2.0	14.8	27.2	42 14.67	3 33.910	— 1 33.84	+63.654
	5351, B. A. C. . .	38.5	51.0	3.4	43 50.97	1 33.910	+ 4 24.70	— 8.812
	29414, Lal. . . .	53.8	6.2	19.0	46 6.33	2 38.832	2 9.34	+26.142
	Astræa	3.0	15.8	28.2	48 15.67	1 42.722		
	5351, B. A. C. . .	25.0	37.0	49.9	50 37.30	1 33.928	4 24.43	— 8.460
	29414, Lal. . . .	40.0	52.2	5.2	52 52.47	2 38.790	2 9.26	+26.434
	Astræa	49.2	2.0	14.0	55 1.73	1 42.388		
	5351, B. A. C. . .	16.0	28.2	41.2	15 58 28.47	1 33.883	4 24.53	— 8.601
	29414, Lal. . . .	31.5	44.0	56.3	16 0 43.93	2 38.763	+ 2 9.07	+26.311
	Astræa	40.2	53.0	5.8	2 53.00	1 42.484		
Apr. 18	Weisse XVI, 83 .	28.2	41.0	53.8	14 35 41.00	1 37.486	+ 1 29.53	—45.712
	Weisse XVI, 121 .	57.5	10.3	23.8	37 10.53	2 53.181		
H.								
	Weisse XVI, 83 .	45.8	55.2	8.0	38 55.33	1 37.440	1 29.40	42.852
	Weisse XVI, 121 .	12.2	24.8	37.2*	40 24.73	2 53.260		
	Weisse XVI, 83 .	45.0	57.8	10.2	42 57.67	1 37.448	1 29.13	45.828
	Weisse XVI, 121 .	14.6	26.8	39.0	44 26.80	2 53.244		
	Weisse XVI, 83 .	5.5	18.2	31.0	47 18.23	1 37.470	1 28.97	45.762
	Weisse XVI, 121 .	34.3	47.2		48 47.20	2 53.200		
	Weisse XVI, 83 .	56.6	8.2	21.1	50 8.63	2 35.580	1 29.53	—45.774
	Weisse XVI, 121 .	25.3	38.2	57.0	52 38.16	3 51.322		
	Lal. 29414, . . .	34.8	47.5	0.2	15 22 47.50	3 39.183	1 4.40	+55.303
	Astræa	39.2	52.0	4.5	23 51.90	1 43.985		
	29414, Lal. . . .	51.0	3.5	16.2	25 3.57	3 39.100	1 4.23	55.325
	Astræa	55.5	7.7	20.2	26 7.80	1 43.880		

Results.

Corr. of Chron. +12.91 s.

	App't. α h. m. s.	App't. δ ° ′ ″
5351, B. A. C. . . .	15 59 9.14	—12 19 44.78
29414, Lal.	16 1 24.61	28 41.09
Weisse XVI, 83 . . .	5 8.90	38 23.69

	Δ α m. s.	Δ δ ′ ″
Astræa—5351, B. A. C.		
Sid. time 14 52 14.59	+4 26.20	— 2 23.33
Δ ρ	.00	— .12
p	— .08	+ 4.05
Astræa—5351, B. A. C.		
Sid. time 15 55 36.38	+4 24.55	—2 12.47
Δ ρ	.00	— .09
p	.00	+ 4.09
Astræa—29,414, Lal.		
Sid. time 15 23 16.56	+2 9.90	+ 6 38.48
Δ ρ	.00	.29
p	— .04	4.08
Astræa—Weisse XVI, 83		
Sid. time 15 23 37.64	—1 33.45	+16 15.47
Δ ρ	.02	.54
p	.04	4.08

* Recorded 10s.8

Corr. of Chron. + 4.14 s.

	App't. α h. m. s.	App't. δ ° ′ ″
29414 Lal.	16 1 24.66	—11 28 41.10

	Δ α m. s.	Δ δ ′ ″
Astræa—29414 Lal.		
Sid. time. h. m. s.		
15 39 23.46	+ 1 04.28	+14 12.31
Δ ρ	.01	.61
p	— .03	4.11

	s.	s.
* Recorded	34.8	47.2

ASTRÆA.

ıte ; 347. erver	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α.	Δ mic.	Results.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.	
ril 18	29414, Lal.	37.3	50.0	2.2	31 49.83	3 39.058	+ 1 4.40	+55.345	
H.	Astræa	41.5	54.2	7.0	32 54.23	1 43.818			
	29414, Lal.	55.5	8.2	21.0	34 8.23	3 39.138	1 4.77	55.481	
	Astræa	0.8	13.0	25.2	35 13.00	1 43.762			
	28414, Lal.	14.0	27.0	40.0	37 27.00	3 39.118	1 4.40	55.509	
	Astræa	19.0	31.2	4.4	38 31.40	1 43.714			
	29414, Lal.	10.0	23.0	35.2	40 22.73	3 39.030	1 4.60	55.501	
	Astræa	15.0	27.0	40.0	41 27.33	1 43.632			
	29414, Lal.	35.0	47.2	0.0	15 42 47.40	3 39.040	1 4.27	55.540	
	Astræa	39.3	51.5	4.2	43 51.67	1 43.605			
	29414, Lal.	54.2	7.0	20.0	44 7.07	3 38.993	1 4.46	55.443	
	Astræa	59.0	11.6	24.0	45 11.53	1 43.658			
	29414, Lal.	38.8	51.0	3.5	54 51.10	3 38.888	1 3.63	55.740	
	Astræa	42.5	54.5	7.2	55 54.73	1 43.253			
	29414, Lal.	27.2	39.7	52.0	58 39.63	3 38.785	1 3.54	+55.697	
	Astræa	30.5	43.0	56.0	59 43.17	1 43.193			
	Weisse XVI, 83	27.0	39.8	52.2	16 26 39.67	1 36.848	1 28.56	—45.694	
	Weisse XVI, 121	55.5	8.0	21.2	28 8.23	2 52.510			
	Weisse XVI, 83	33.8	46.2	59.0	29 46.33	1 36.742	1 29.24	45.754	
	Weisse XVI, 121	3.2	15.5	28.0	31 15.57	2 52.464			
	Weisse XVI, 83	31.5	44.2	56.5	32 44.07	1 36.726	1 29.33	45.771	
	Weisse XVI, 121	0.8	13.2	26.2	34 13.40	2 52.465			
	Weisse XVI, 83	26.5	39.2	51.8	35 39.17	1 36.735	1 29.33	45.669	
	Weisse XVI, 121	56.0	8.3	21.2	37 8.50	2 52.372			
	Weisse XVI, 83	32.2	45.2	57.8	42 45.07	2 19.174	+ 1 28.86	—44.932	
	Weisse XVI, 121	1.5	14.0	26.3	44 13.93	3 34.075			
ril 20	5351, B. A. C.	34.0	46.5	59.2	14 15 46.57	3 29.487	+ 2 10.53	+49.478	
	Astræa	44.5	57.0	9.8	17 57.10	1 40.114			
	5351, B. A. C.	12.2	24.8	37.4	20 24.80	3 33.144	2 10.23	49.495	
	Astræa	22.6	35.0	47.5	22 35.03	1 43.745			
	5351, B. A. C.	58.0	10.7	23.1	23 10.60	3 33.152	2 10.33	49.495	
	Astræa	8.5	20.8	33.5	26 20.93	1 43.762			
	5351, B. A. C.	4.8	17.2	29.5	29 17.17	3 33.238	2 10.06	49.692	
	Astræa	14.5	27.2	40.0	31 27.23	1 43.651			
	5351, B. A. C.	35.5	48.0	0.5	32 48.00	3 33.168	2 10.07	49.588	
	Astræa	45.5	58.2	10.5	* 34 58.07	1 43.685			
	5351, B. A. C.	13.8	26.2	39.0	36 26.33	3 33.145	2 9.87	49.605	
	Astræa	23.6	36.0	49.0	38 36.20	1 43.645			
	5351, B. A. C.	0.0	12.8	25.4	40 12.73	3 33.232	2 10.20	49.706	
	Astræa	10.4	22.8	35.6	42 22.93	1 43.631			
	5351, B. A. C.	42.2	54.8	7.8	43 54.93	3 33.226	2 10.24	49.643	
	Astræa	52.8	5.1	17.6	46 5.17	1 43.688			
	5351, B. A. C.	26.2	38.6	51.2	48 38.67	3 33.272	2 9.80	49.735	
	Astræa	36.0	48.2	1.2	50 48.47	1 43.642			

Corr. of Chron. — 5.05 s.

	App't. α h. m. s.	App't. δ ° ′ ″
5351, B. A. C.	15 59 9.21	—12 19 44.19

Astræa—5351, B. A. C.	Δ α	Δ δ
Sid. time h. m. s.	m. s.	′ ″
14 36 53.81	+2 10.05	+12 42.26
Δ ρ	+2 .00	.58
p	— .10	4.11

ASTRÆA.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.	
April 22 H.	Weisse XV, 1109 .	50.8	3.0	15.4	14 50 3.07	1 31.898			
	5351, B. A. C. . .	51.1	3.2	16.2	51 3.59	3 31.833	— 1 0.43	+60.040	
	Weisse XV, 1109 .	20.8	33.1	46.0	53 33.30	1 31.906			
	5351, B. A. C. . .	21.2	34.2	46.8	54 34.07	3 31.812	— 1 0.77	60.011	
	Weisse XV, 1109 .	24.0	36.2	49.0	57 36.40	1 31.920			
	5351, B. A. C. . .	24.8	37.1	49.8	58 37.23	3 31.802	— 1 0.83	59.987	Corr. of Chron. — 13.4
	Weisse XV, 1109 .	44.2	56.8	9.2	59 56.73	1 31.902			
	5351, B. A. C. . .	45.2	57.8	10.5	15 0 57.83	3 31.790	1 1.10	59.993	App't. α: 5351, B. A. C. 15 59 9.25; Weisse XV, 1109 58 8.56
	Weisse XV, 1109 .	50.8	3.2	16.1	1 3.37	1 31.832			
	5351, B. A. C. . .	52.0	4.2	16.8	2 4.33	3 31.754	— 1 0.96	60.027	Astræa—Weisse XV, 1109 Δ α: Sid. time 15 18 49.92 +1 53.33; Δρ .00; p .00
	Weisse XV, 1109 .	41.8	54.2	7.1	9 54.37	2 37.478	+ 1 53.46	+19.917	
	Astræa	35.2	47.8	0.5	11 47.83	1 47.593			
	Weisse XV, 1109 .	26.0	39.2	51.8	14 39.00	2 37.478	+ 1 53.20	+19.984	
	Astræa	19.8	32.0	44.8	16 32.20	1 47.526			
	Weisse XV, 1109 .	46.0	58.3	11.2	17 58.50	2 37.465	+ 1 53.30	+19.999	
	Astræa	39.3	51.8	4.3	19 51.80	1 47.498			
	Weisse XV, 1109 .	56.7	9.2	22.0	20 9.30	2 37.400	+ 1 53.37	+19.992	
	Astræa	50.1	2.7	15.2	22 2.67	1 47.440			
	Weisse XV, 1109 .	55.1	7.3	20.0	23 7.47	2 37.412	+ 1 53.33	+20.052	* Recorded 0s.5
	Astræa	48.2	1.0	13.2	25 0.80	1 47.392			
Apr. 26 H.	Astræa	40.4	52.2	5.1	15 33 52.57	1 29.034			
	Weisse XV, 1109 .	38.3	50.8	3.0	34 50.70	3 49.332	— 0 58.13	+80.403	Corr. of Chron. —30.49
	Astræa	1.2	13.5	26.3	37 13.67	1 29.118			
	Weisse XV, 1109 .	59.3	11.5	24.1	38 11.63	3 49.466	0 57.96	80.453	App't. α: 29208, Lal. 15 56 1.51; Weisse XV, 1109 15 58 8.43
	Astræa	51.3	4.0	16.4	39 3.90	1 29.320			
	Weisse XV, 1109 .	48.1	0.8	13.1	40 0.67	3 49.613	0 56.77	80.398	Astræa—29208, Lal. Δ α: Sid. time 16 1 58.34 + 1 8.79; Δρ .00; p .00; Corr. for inc. of wire — .25
	Astræa	51.0	3.1	16.0	44 3.37	1 29.078			
	Weisse XV, 1109 .	47.2	59.8	12.2	44 59.73	3 49.289	0 56.36	80.316	
	Astræa	37.0	50.0	2.2	49 49.73	1 28.945			
	Weisse XV, 1109 .	33.7	46.0	58.2	50 45.97	3 49.305	— 0 56.24	+80.465	Astræa—Weisse XV, 1109 Sid time 15 40 18.16 — 0 57.09; Δρ .00; p .02; Corr. for inc. of wire — .29
	29208 Lal. . . .	51.0	3.0	15.9	54 3.30	1 32.832	+ 1 9.67	—69.763	
	Astræa	0.7	13.0	25.2	56 12.97	3 42.490			
	29208, Lal. . . .	50.5	3.0	15.5	57 3.00	1 32.875	1 8.73	69.655	Position circle during observation 273
	Astræa	59.2	12.0	24.0	58 11.73	3 42.425			Position circle when star follows the transit wire 2
	29208, Lal. . . .	13.5	26.0	38.2	16 1 25.90	1 32.793	1 8.90	69.457	Inclination of transit wire . . . . . 0.
	Astræa	22.2	35.0	47.2	2 34.80	3 42.145			
	29208, Lal. . . .	3.5	15.8	28.2	5 15.83	1 32.803	1 8.07	69.420	
	Astræa	11.5	24.0	36.2	6 23.90	3 42.118			
	29208, Lal. . . .	39.5	52.1	4.8	7 52.13	1 32.798	+ 1 8.60	69.435	
	Astræa	48.0	1.0	13.2	9 0.73	3 42.128			
Apr. 30 H.	Astræa	38.5	51.0	3.2	16 31 50.90	2 52.256			
	29208, Lal. . . .	38.5	51.0	3.3	33 50.93	2 42.353	— 2 0.03	9.903	
	Astræa	40.0	52.5	5.1	35 52.53	2 52.014			
	29208, Lal. . . .	40.5	52.2	5.1	37 52.60	2 42.247	2 0.07	9.767	

ASTRÆA.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.
		s.	s.	s.	h. m. s.	rev. revs.	m. s.	revs.
April 30 H.	Astræa	32.8	45.0	57.5	16 39 45.10	2 51.730		
	29208, Lal.	33.5	46.2	58.5	41 46.07	2 41.930	— 2 0.97	— 9.800
	Astræa	3.5	16.0	28.7	43 16.07	2 52.168		
	29208, Lal.	3.8	16.2	29.1	45 16.37	2 42.330	2 0.30	9.738
	Astræa	57.5	9.8	22.2	47 9.83	2 51.823		
	29208, Lal.	57.8	10.8	23.0	49 10.53	2 42.178	2 0.70	9.645
	*Astræa	33.8	46.0	58.9	51 46.23	2 51.736		
	29208, Lal.	34.0	45.3	59.0	53 46.43	2 42.086	— 2 0.20	— 9.650
May 5 H.	Astræa	21.0	33.5	46.0	15 48 33.50	3 33.862		
	5324, B. A. C.	34.5	47.1	59.6	54 47.07	1 42.282	— 6 13.57	—51.685
	Astræa	32.6	45.0	57.4	15 57 45.00	3 33.936		
	*	50.2	2.0	15.3	16 3 2.50	1 39.635		
	5324, B. A. C.	46.3	58.8	11.5	3 58.87	1 42.510	6 13.87	51.531
	Astræa	42.5	55.0	7.2	6 54.90	3 33.800		
	*	0.5	13.1	25.2	12 12.93	1 39.574		
	5324, B. A. C.	56.6	9.2	21.2	13 9.00	1 42.392	6 14.10	51.513
	Astræa	51.2	3.5	16.5	21 3.73	3 33.345		
	*	10.0	22.5	35.2	26 22.57	1 39.218		
	5324, B. A. C.	6.0	18.5	31.1	27 18.53	1 42.111	6 14.80	51.339
	Astræa	54.2	6.5	19.1	31 6.53	3 31.718		
	*		25.5	37.8	36 25.50	1 38.733		
	5324, B. A. C.	9.1	21.2	34.0	37 21.43	1 40.649	6 14.90	51.174
	Astræa	21.3	33.9	46.2	39 33.80	3 31.555		
	*	40.0	52.6	5.5	44 52.70	1 38.748		
	5324, B. A. C.	36.3	48.8	1.5	45 48.87	1 40.678	— 6 15.07	—50.982
May 6 H.	Weisse XV, 861	39.8	52.2	4.7	15 33 52.23	3 32.766	+ 4 14.40	+61.949
	Astræa	54.2	6.5	19.2	38 6.63	1 30.922		
	Weisse XV, 861	0.2	12.6	25.3	40 12.70	1 32.703	4 14.83	62.075
	Astræa	15.1	27.4	40.1	44 27.53	1 30.733		
	Weisse XV, 861	47.2	59.7	12.2	46 59.70	1 32.689	+ 4 14.03	+62.116
	Astræa	1.2	13.8	26.2	51 13.73	1 30.678		
	Astræa	40.0	52.5	4.8	53 52.43	3 38.955		
	Weisse XV, 976	1.5	13.0	26.2	56 13.57	1 32.150	— 2 21.14	—66.910
	Astræa	41.0	53.5	6.5	58 53.57	3 38.793		
	Weisse XV, 976	2.8	15.2	28.1	16 1 15.37	1 32.120	2 21.80	66.778
	Astræa	9.0	21.5	34.2	16 7 21.57	3 38.509		
	Weisse XV, 976	31.2	43.8	56.5	9 43.83	1 31.907	2 22.26	66.707
	Weisse XV, 976	44.5	57.0	9.2	11 56.90	1 31.923		
	5324, B. A. C.	29.8	42.0	54.6	16 42.13	2 31.125	4 45.23	29.234
	Weisse XV, 976	21.5	33.8	46.5	19 33.93	1 31.658		
	5324, B. A. C.	6.4	19.0	31.3	24 18.90	2 30.903	4 44.97	29.277
	Weisse XV, 976	46.0	58.2	11.2	25 58.47	1 31.490		
	5324, B. A. C.	31.0	43.4	56.1	30 43.50	2 30.725	— 4 45.03	—29.267
May 7 I.	Weisse XV, 861	41.6	54.3	6.5	15 36 54.10	3 47.212	+ 3 20.53	+75.829
	Astræa	2.2	14.7	27.0	40 14.63	1 31.488		
	Weisse XV, 861	42.5	55.2	7.2	41 54.97	3 47.118	3 20.60	75.731
	Astræa	3.2	15.5	28.0	45 15.57	1 31.492		

Results.

Corr. of Chron. —46.27 s.

	App't. α h. m. s.	App't. δ ° ′ ″
29208, Lal.	15 56 1.57	—11 25 53.

Astræa—29208, Lal.	Δ α m. s.	Δ δ ′ ″
Sid. time 16 40 50.54	—2 00.38	—2 29.
Δ ρ	.00	.
p	+ .06	+ 4.

* Lost in haze and moonlight.

Corr. of Chron. —1 6.62 m. s

	App't. α h. m. s.	App't. δ ° ′ ″
5324, B. A. C.	15 56 0.56	—10 56 48.

Astræa, 5324, B. A. C.	Δ α m. s.	Δ δ ′ ″
Sid. time 16 13 2.95	—6 14.36	—13 9.
Δ ρ	.00	— .
p	+ .03	+ 4.

Corr. of Chron. —1 10.18 m. s.

	App't. α h. m. s.	App't. δ ° ′ ″
Weisse XV, 861	15 44 38.72	—11 22 19.
" " 976	51 15.59	—10 49 19.

Astræa—Weisse XV, 861	Δ α m. s.	Δ δ ′ ″
Sid. time 15 43 25.78	+4 14.42	+15 53.
Δ ρ	.00	.
p	.00	+ 4.

Astræa—Weisse XV, 976		
Sid. time 15 58 58.98	—2 21.73	— 17 6.
Δ ρ	.00	— .
p	+ .01	+ 4.

(Continued.)

ASTRÆA.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s	h. m. s.	w. revs.	m. s.	revs.	
May 7 H.	Weisse XV, 861	43.5	56.2	8.5	16 47 56.07	3 47.031	+ 3 20.56	+75.814	
	Astræa	4.2	16.5	29.2	51 16.63	1 31.322			
	Weisse XV, 861	44.3	56.8	9.3	53 56.80	3 46.850	3 20.13	75.916	
	Astræa	4.5	17.1	29.2	57 16.93	1 31.041			
	Weisse XV, 861	43.5	56.2	8.3	58 56.00	3 46.712	+ 3 19.97	+75.849	
	Astræa	3.3	16.1	28.5	2 15.97	1 30.968			
	Astræa	45.5	56.3	8.6	5 56.13	3 40.385			
	Weisse XV, 976	59.8	12.2	25.0	9 12.33	1 47.555	− 3 16.20	−52.935	
	Astræa	38.8	51.5	4.1	10 51.47	3 40.333			
	Weisse XV, 976	55.4	7.8	20.4	14 7.87	1 47.546	3 16.40	52.892	
	Astræa	13.8	26.7	39.0	16 26.50	3 40.110			
	Weisse XV, 976	30.7	43.1	56.0	19 43.27	1 47.438	3 16.77	52.777	
	Astræa	40.5	52.9	5.6	21 53.00	3 39.986			
	Weisse XV, 976	57.6	10.1	23.5	25 10.07	1 47.396	3 17.07	52.695	
	Astræa	49.2	1.8	14.3	27 1.77	3 39.863			
	Weisse XV, 976	5.5	18.3	30.8	30 18.20	1 47.330	3 16.43	52.638	
	5324, B. A. C.	51.2	3.5	16.2	35 3.63	2 46.547	4 45.43	+29.249	
	Weisse XV, 976	5.2	17.8	30.2	37 17.73	1 47.297			
	5324, B. A. C.	49.5	2.0	14.7	42 2.07	2 46.705	4 44.34	+29.440	
	Weisse XV, 976	34.9	47.2	0.0	43 47.37	1 47.313			
	5324, B. A. C.		32.5	45.1	48 32.50	2 46.595	4 45.13	+29.314	
May 16 H.	Astræa	42.3	54.5	7.1	16 5 54.63	2 50.548			
	Weisse XV, 828	43.0	55.5	8.5	8 55.67	2 41.202	− 3 1.04	− 9.346	
	Astræa	26.2	38.5	51.2	14 38.63	2 50.263			
	Weisse XV, 828	27.5	40.0	52.3	17 39.93	2 40.920	3 1.30	− 9.343	
	28945, Lal.	42.5	54.8	7.2	20 54.83	3 36.430	6 16.20	+16.240	
	Astræa	29.2	41.8	54.2	23 41.73	2 50.492			
	Weisse XV, 828	31.0	43.5	56.2	26 43.57	2 41.170	3 1.84	− 9.322	
	28945, Lal.	45.5	58.2	11.0	29 58.23	3 36.586	6 16.50	+16.167	
	Astræa	0.8	13.1	25.8	33 13.23	2 49.325			
	Weisse XV, 828	3.2	15.2	28.2	36 15.53	2 40.202	3 2.30	− 9.103	
	28945, Lal.	17.5	30.2	42.4	39 30.03	3 35.692	6 16.80	+16.440	
	Astræa	33.5	46.2	58.5	41 46.07	2 48.980			
	Weisse XV, 828	36.2	48.8	1.0	44 48.67	2 39.906	3 2.60	− 9.074	
	28945, Lal.	51.0	3.2	16.0	48 3.40	3 35.390	6 17.33	+16.483	
	Astræa	7.5	20.0	32.5	50 20.00	2 48.783			
	Weisse XV, 828	10.1	23.2	35.2	53 22.83	2 39.803	3 2.83	− 8.980	
	28945, Lal.	25.2	37.3[2]	50.2	56 37.57	3 35.385	− 6 17.57	+16.575	
	28607, Lal.	3.5	15.8	28.3	17 2 15.87	[1] 1 48.133	+ 4 38.66	−30.812	
	Astræa	42.0	54.5[3]	7.1	6 54.53	2 48.872			
	Weisse XV, 828	45.7	58.2	11.0	9 58.30	2 40.025	− 3 3.77	+ 8.847	
	28945, Lal.	0.6	13.0	25.5	13 13.03	3 35.454	− 6 18.50	−16.655	
	28607, Lal.	27.6	40.1	52.5	15 40.07	[4] 1 47.807	+ 4 38.19	−30.678	
	Astræa	5.8	18.2	30.8	20 18.26	2 48.412			
	Weisse XV, 828	10.3	22.8	35.0	23 22.70	2 39.677	− 3 4.44	− 8.735	
	28985, Lal.	24.8	37.2	50.0	26 37.33	3 35.145	− 6 19.07	−16.806	
May 17 H.	28607, Lal.	48.5	0.8	13.5	16 9 0.93	1 51.272	+ 3 44.74	+20.158	
	Astræa	33.0	45.8	58.2	12 45.67	2 41.398			
	Weisse XV, 828	30.8	43.4	56.2	16 43.47	2 43.160	− 3 57.80	+ 1.762	
	28607, Lal.	16.5	28.9	41.4	19 28.93	1 50.910	+ 3 44.40	−20.124	
	Astræa	0.8	13.5	25.5	23 13.33	2 41.002			
	Weisse XV, 828	59.0	11.2	24.1	27 11.43	2 42.871	− 3 58.10	+ 1.869	

Corr. of Chron. m. s. −1 14.17

	App't. α h. m. s.	App' ° ′
Weisse XV, 861	15 44 38.74	−11 32
Weisse XV, 976	51 15.40	−10 49

Astræa—Weisse XV, 861

	Δ α m. s.	Δ ′
Sid. time 15 50 1.78	+3 20.36	+19
Δ ρ	.01	
p	.00	

Astræa—Weisse XV, 976

Sid. time 16 15 11.60	−3 16.57	−13
Δ ρ	.00	
p	+ .03	

Corr. of Chron. m. s. −1 49.75

	App't. α h. m. s.	App' ° ′
Weisse XV, 828	15 42 38.40	−10 31
28945, Lal.	45 53.02	37
28607, Lal.	34 56.00	25

Astræa—Weisse XV, 828

	Δ α m. s.	′
Sid. time 16 37 46.13	−3 2.50	−2
Δ ρ	.00	−
p	+ .07	+

Astræa—28945, Lal.

Sid. time 16 42 34.89	−6 17.43	+4
Δ ρ	.00	+
p	+ .07	+

Astræa—28607, Lal.

Sid. time 17 11 46.59	+4 38.42	−7
Δ ρ	− .01	−
p	+ .12	+

[1] Recorded 51s.0 [2] Recorded 47s.5 [3] Recorded [4] Wire recorded 2.

ASTRÆA.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ a	Δ mic.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.
May 17	28607, Lal.	50.0	2.5	15.2	30 2.57	1 50.550	+ 3 43.93	—19.865
	Astræa	34.0	46.5	59.0	33 46.50	2 40.383		
H.	Weisse XV, 828	32.6	45.1	57.6	37 45.10	2 42.458	— 3 58.60	+ 2.075
	28607, Lal.	20.6	33.1	45.2	42 32.97	1 49.250	+ 3 43.66	—19.772
	Astræa	4.2	16.5	29.2	46 16.63	2 38.990		
	Weisse XV, 828	3.5	15.8	28.5	50 15.93	2 41.070	— 3 59.30	+ 2.080
	28607, Lal.	58.3	10.8	23.3	52 10.80	1 49.196	+ 3 42.87	—19.661
	Astræa	41.0	53.8	6.2	55 53.67	2 38.825		
	Weisse XV, 828	41.0	53.2	5.8	59 53.33	2 41.074	— 3 59.66	+ 2.249
June 6	5074, B. A. C.	3.0	15.2	27.8	17 52 15.33	1 44.110	+ 5 51.94	—39.763
	Astræa	55.0	7.0	19.8	58 7.27	3 25.768		
H.	5074, B. A. C.	40.0	52.1	4.5	18 0 52.20	1 33.610	5 51.07	39.630
	Astræa	31.0	43.1	55.7	6 43.27	2 45.208		
	5074, B. A. C.	18.0	30.5	43.0	8 30.50	1 33.316	5 50.90	39.729
	Astræa	9.0	21.0	34.2	14 21.40	2 43.013		
	5074, B. A. C.	20.8	32.8	45.2	16 32.93	1 32.952	5 50.84	39.686
	Astræa	11.2	24.0	36.1	22 23.77	2 42.606		
	5074, B. A. C.	53.0	5.5	18.2	24 5.57	1 32.726	+ 5 50.63	—39.603
	Astræa	43.5	56.0	9.1	29 56.20	2 42.297		
June 8	5074, B. A. C.	33.0	45.5	58.2	18 0 45.57	1 56.761	+ 4 31.60	—36.779
	Astræa	4.5	17.2	29.8	5 17.17	2 53.508*		
H.	5074, B. A. C.	24.5	36.0	49.6	18 8 36.70	1 36.072	4 31.67	36.870
	Astræa	55.8	8.5	20.8	13 8.37	2 42.910		
	5074, B. A. C.	8.0	20.4	33.0	16 20.47	1 35.834	4 31.36	36.799
	Astræa	39.5	51.8	4.2	20 51.83	2 42.601		
	5074, B. A. C.	25.0	37.2	50.2	23 37.47	1 35.560	4 31.14	36.715
	Astræa	56.0	8.5		28 8.61	2 42.243		
	5074, B. A. C.	26.5	39.2	51.6	29 39.10	1 35.328	+ 4 31.00	36.826
	Astræa	57.5	10.0	22.8	34 10.10	2 42.122		
June 11	5074, B. A. C.	29.2	42.0	54.8	18 24 42.00	1 38.482	+ 2 40.79	—36.065
	Astræa			35.2	27 22.79	2 44.515		
I.	5074, B. A. C.	34.5	47.0	59.2	32 46.90	1 38.165	2 39.47	36.149
	Astræa	14.0	26.3	38.8	45 26.37	2 44.282		
	5074, B. A. C.	11.5	24.1	36.8	37 24.13	1 37.897	2 40.47	36.202
	Astræa	51.8	4.5	17.5*	40 4.60	2 44.067		
	5074, B. A. C.	34.0	46.5	59.2	47 46.57	1 37.628	2 39.73	36.099
	Astræa		26.0	38.2	50 26.30	2 43.695		
	5074, B. A. C.	37.2	49.6	2.1	51 49.63	1 37.366	2 40.00	36.094
	Astræa	17.0	29.7	42.2	54 29.63	2 43.428		
	5074, B. A. C.	39.2	51.6	4.2	55 51.67	1 37.089	2 40.16	36.156
	Astræa	19.3	32.2	44.0	58 31.83	2 43.213		
	5074, B. A. C.	2.0	14.5	27.1	19 0 14.53	1 36.748	+ 2 39.84	36.157
	Astræa	41.8	54.2	7.1	2 54.37	2 42.873		

Results.

May 17 — Corr. of Chron. m. s. — 1 54.28

	App't. a h. m. s.	App't. δ ° ′ ″
28607, Lal.	15 34 56.00	—10 25 49.9
Weisse XV, 828	42 38.42	31 25.8

Astræa—28607, Lal.	Δ a m. s.	Δ δ ′ ″
Sid. time 16 32 28.88	+3 43.92	+ 5 5.9
Δ ρ	.00	— .3
p	.07	— 4.1

Astræa—Weisse XV, 828		
Sid. time 16 32 28.88	—3 58.69	+ 0 30.8
Δ ρ	.00	.0
p	+ .07	4.1

June 6 — Corr. of Chron. m. s. + 1 53.37

	App't. a h. m. s.	App't. δ ° ′ ″
5074, B. A. C.	15 15 57.56	—9 46 8.3

Astræa—5074, B. A. C.	Δ a m. s.	Δ δ ′ ″
Sid. time 18 16 11.75	+5 51.07	—10 9.1
Δ ρ	— .02	— .3
p	+ .19	+ 3.0

June 8 — Corr. of Chron. m. s. + 1 54.28

	App't. a h. m. s.	App't. δ ° ′ ″
5074, B. A. C.	15 15 57.54	—9 46 8.3

Astræa—5074, B. A. C.	Δ a m. s.	Δ δ ′ ″
Sid. time 18 22 13.50	+4 31.36	— 9 25.9
Δ ρ	— .02	— .3
p	+ .20	+ 3.0

June 11 — Corr. of Chron. m. s. + 1 55.64

	App't. a h. m. s.	App't. δ ° ′ ″
5074, B. A. C.	15 15 57.54	—9 46 8.0

Astræa—5074, B. A. C.	Δ a m. s.	Δ δ ′ ″
Sid. time 18 56 22.61	+2 40.01	— 9 15.5
Δ ρ	— .04	— .7
p	+ .22	+ 3.5

(Continued.)

ASTRÆA.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.	
June 11	5074, B. A. C. . .	58.2	11.0	23.1	19 13 10.77	1 36.418	+ 2 40.06	36.186	
H.	Astræa		50.8	3.0	15 50.83	2 42.572			
	5074, B. A. C. . .	4.0	16.3	29.0	19 16.93	1 36.945	+ 2 39.53	—36.193	
	Astræa	43.6	56.0	8.3	21 55.96	2 43.106			
June 14	5074, B. A. C. . .	58.5	11.2	23.5	17 21 11.07	1 42.191	+ 1 4.56	—40.185	m. s.
H.	Astræa	3.0	15.8	28.1	22 15.63	2 52.344			Corr. of Chron. +1 54.69
	5074, B. A. C. . .	13.8	26.5	39.2	24 26.50	1 42.020	1 4.10	40.112	*App't. α* *App*
	Astræa	18.0	30.8	43.0	25 30.60	2 52.100			h. m. s. ° ′
	5074, B. A. C. . .	32.1	44.8	57.5	27 44.80	1 41.994	1 4.20	40.168	5074, B. A. C. . . . 15 15 57.46 —9 46
	Astræa	31.5	49.0	1.5	28 49.00	2 52.130			Astræa—5074, B. A. C. Δ α
	5074, B. A. C. . .	9.2	22.0	34.2	30 21.90	1 41.935	1 4.33	40.260	h. m. s. m. s.
	Astræa	13.7	26.2	38.8	31 26.23	2 52.109			Sid. time 17 30 39.56 +1 4.27 —10
									Δ ρ — .01 —
									p + .14 +
	5074, B. A. C. . .	26.3	38.8	51.0	34 38.70	1 41.861	+ 1 4.17	—40.146	
	Astræa	30.3	42.8	55.5	35 42.87	2 51.975			

HEBE.

ate; 47. erver	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet − Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.	
g. 10	Weisse XVI, 1033 .				17 50 54.00	3 41.160	+ 1 5.50	+17.865	
M.	Weisse XVI, 1048 .				51 40.00	3 48.940			Corr. of Chron. + 2 42.92
	Hebe				51 59.50	2 53.290			
									App't. α / App't. δ
	Weisse XVI, 1033 .				18 18 33.00	3 41.710	1 5.50	18.085	h m. s. / ° ′ ″
	Hebe				19 38.50	2 53.620			Weisse XVI, 1033 16 54 11.72 — 9 3 14.3
	Weisse XVI, 1033 .				22 32.50	3 40.810	1 5.30	17.145	Hebe—XVI, 1033
	Hebe				23 37.80	2 53.660			h. m. s. / Δ α m. s. / Δ δ ′ ″
	Weisse XVI, 1033 .				28 34.00	3 40.570	1 4.00		Sid. time 18 19 52.62 +1 5.56 + 4 28.4
	Hebe				29 38.00	2 53.620			Δ ρ .00 1
									p .00 3.5
	Weisse XVI, 1033 .				32 17.00	3 40.470	1 6.00	16.805	Hebe—XVI, 1033
	Hebe				33 23.00	3 33.660			18 52 34.92 +1 6.00 + 4 12.9
									Δ ρ .00 .1
	Weisse XVI, 1033 .				45 54.00	3 40.040	1 7.00	16.533	p .12 3.4
	Hebe				47 1.00	2 53.152			
	Weisse XVI, 1033 .				51 38.00	3 39.970	+ 1 5.00	16.395	
	Hebe				52 43.00	2 53.570			
									Corr. of Chron. + 2 47.02
									App't. α / App't. δ
g. 11	Weisse XVI, 1033 .	16.0	28.3	39.0	17 15 27.77	2 55.040	1 17.06	+17.080	h. m. s. / ° ′ ″
d.	Hebe	33.0	44.5	57.0	16 44.83	3 42.125			Weisse XVI, 1033 16 54 11.70 — 9 3 14.2
									XVII, 83 17 5 17.80 5 39.0
	Weisse XVI, 1033 .	12.0	24.8		24 24.76	2 54.910	+ 1 16.11	−17.367	Hebe—Weisse XVI, 1033
	Hebe	27.4	42.0	53.2	25 40.87	3 42.282			h. m. s. / Δ α m. s. / Δ δ ′ ″
	Weisse XVII, 83 .	18.6	30.5	43.6	35 30.90	3 34.325	— 9 50.03	7.957	Sid. time 17 37 2.39 +1 17.19 — 4 29.0
	Weisse XVI, 1033 .	24.0	36.2	49.0	38 36.40	2 54.830	+ 1 17.33	17.600	Δ ρ .00 — .1
	Hebe	41.4	53.8	6.0	39 53.73	3 42.435			p .04 + 3.5
	Weisse XVII, 83 .	30.5	42.8	55.5	49 42.93	3 34.340	— 9 49.20	8.095	Hebe—Weisse XVII, 83
	Weisse XVI, 1033 .	12.8	25.0	37.2	53 25.00	2 54.680	+ 1 17.07	18.005	17 42 52.58 +9 49.44 —2 5.9
	Hebe	30.0	42.0	54.2	54 42.07	3 42.690			Δ ρ .00 — .1
	Weisse XVII, 83 .	18.7	31.0	43.8	18 4 31.17	3 34.145	— 9 49.10	— 8.545	p .04 + 3.5
; 18	Hebe				17 58 35.00	3 30.400			
f.	Weisse XVII, 3 .				18 2 21.00	3 58.226	— 3 46.00	+27.826	
	(1)				5 53.00	2 50.130			
	(2)				10 31.00	3 58.075			
	Hebe				14 50.00	3 31.170			
	Weisse XVII, 3 .				18 35.00	3 58.920	3 45.00	27.750	
	(1)				22 8.00	2 50.540			
	(2)				26 45.00	2 38.320			Corr. of Chron. +2 22.41
	Hebe				32 33.50	3 32.850			
	Weisse XVII, 3 .				36 17.50	3 60.190	3 44.00	27.340	App't. α / App't. δ
	(1)				39 49.50	2 51.870			h. m. s. / ° ′ ″
	(2)				44 27.30	2 59.650			Weisse XVII, 3 . . 17 1 23.78 —10 18 57.9
	Hebe				57 3.80	3 33.184			Hebe—Weisse XVII, 3
	Weisse XVII, 3 .				19 0 47.50	3 59.640	3 43.70	26.456	h. m. s. / Δ α m. s. / Δ δ ′ ″
	Hebe	3.5	15.8	28.5	19 6 15.93	2 29.208			Sid. time 18 48 38.54 −3 44.43 + 6 51.4
	Weisse XVII, 3 .	47.0	59.8	12.2	9 59.67	2 55.430	3 43.74	26.222	Δ ρ + .01 .3
									p .13 3.3
	Hebe	55.0	7.5	20.0	13 7.50	2 29.055			
	Weisse XVII, 3 .	39.2	51.8	4.6	16 51.57	2 55.170	3 44.07	26.115	
	Hebe	14.8		39.5	21 27.15	2 28.855			
	Weisse XVII, 3 .	59.2	11.8	24.0	25 11.67	2 54.630	3 44.52	25.775	

HEBE.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic. w	revs.	Planet—Star. Δ α m. s.	Δ mic. revs.	Results.
		s.	s.	s.	h. m. s.					
Aug. 19	Hebe	25.0	36.8	49.5	18 16 37.10	2	44.290			
M.	Weisse XVII, 3	43.9	56.1	9.0	19 56.33	2	36.170	— 3 19.25	— 8.120	Corr. of Chron. m. s. +3 2.96
	Hebe	52.2	5.0	17.5	24 4.90	2	44.350			
	Weisse XVII, 3	12.5	24.0	36.8	27 24.43	2	35.960	3 19.53	8.390	Δpp't. α h. m. s. / Δpp' ° ′
	Hebe	22.8	35.0	47.8	31 35.20	2	44.432			Weisse XVII, 3 . . 17 1 23.72 —10 18
	Weisse XVII, 3	41.8	54.0	7.0	34 54.27	2	35.760	3 19.07	8.672	Hebe—Weisse XVII, 3 Δ α m. s. / ′
	Hebe	42.1	54.5	7.2	37 54.60	2	44.365			Sid. time 18 35 22.08 —3 19.31 —2
	Weisse XVII, 3	1.5	14.0	26.9	41 14.13	2	35.590	3 19.53	8.775	Δ ρ .00
	Hebe	11.4	24.0	36.0	51 23.80	2	43.640			ρ + .10 +
	Weisse XVII, 3	30.4	43.0	55.6	54 43.00	2	34.640	3 19.20	— 9.000	
Aug. 20	Lal. 31078	1.2	13.2		18 8 13.30					
	Hebe	26.0	38.0	50.5	8 38.16					
M.	Weisse XVII, 3	17.9	30.4	42.8	11 30.37					
	Lal. 31078	17.0	29.8		19 29.90	3	41.628	+ 0 24.33	+20.756	
	Hebe	42.0	54.0	6.7	19 54.23	2	50.867			
	Weisse XVII, 3	34.8	47.6	59.9	22 47.43	1	37.120	— 2 53.20	—43.888	Corr. of Chron. m. s. +3 3.93
	Lal. 31078	28.7	41.0		41 41.10	3	40.950	+ 0 24.47	+20.215	
	Hebe	53.5	5.2	18.0	42 5.57	2	50.730			Δpp't. α h. m. s. / Δpp' ° ′
	Weisse XVII, 3	46.0	58.5	11.0	44 58.50	1	36.560	— 2 52.93	—44.311	31078, Lal. . . . . 16 58 5.21 —10 35
	Lal. 31078	6.2	18.9		51 19.00	3	40.512	+ 0 25.20	+19.934	Weisse XVII, 3 . . . 17 1 23.71 18
	Hebe	32.0	44.0	56.6	51 44.20	2	50.573			
	Weisse XVII, 3	24.0	36.5	49.0	54 36.50	1	36.128	— 2 52.30	—44.586	Hebe—31078, Lalande Δ α h. m. s. / m. s. / ′
	Lal. 31078	52.1	4.7		19 7 4.80	3	40.040	+ 0 25.36	+19.735	Sid. time 19 5 34.41 +0 25.54 + 5
	Hebe	18.0	30.0	42.5	8 30.16	2	50.300			Δ ρ .01
	Weisse XVII, 3	9.8	22.0	34.8	11 22.20	1	35.600	— 2 52.04	—44.841	ρ .12
	Lal. 31078	34.6	7.0		17 7.10	3	39.580	+ 0 26.10	+19.455	Hebe—Weisse XVII, 123
	Hebe	20.8	33.0	45.8	17 33.20	2	50.120			19 5 34.41 —2 52.23 —11
	Weisse XVII, 3	12.1	24.9	37.2	20.24.73	1	35.118	— 2 51.53	—45.143	Δ ρ — .01 —
	Lal. 31078	3.1	15.4		25 15.50	3	39.188	+ 0 26.50	+19.277	ρ + .12 +
	Hebe	29.5	42.0	54.5	25 42.00	2	49.906			
	Weisse XVII, 3	22.0	34.0	46.4	28 34.13	1	34.760	— 2 52.13	—45.287	
	Lal. 31078	25.0	37.0	49.6	31 37.20	3	38.672	+ 0 26.83	+19.052	
	Hebe	51.8	4.0	16.3	32 4.03	2	49.615			
	Weisse XVII, 3		55.4	8.0	34 55.50	1	34.300	— 2 51.47	—45.456	
Aug. 25	(3)	51.2	4.0	16.2	19 50 3.80	1	40.800			Corr. of Chron. m. s. —3 9.17
	(4)	53.0	5.5	18.0	53 5.50	2	53.730			
M.										Δpp't. α h. m. s. / Δpp' ° ′
	(3)	59.2	12.0	24.4	20 3 11.87	1	40.244	+ 3 44.99	—41.797	Weisse XVII, 18 . . 17 2 21.40 11 33
	(4)	1.0	13.5	26.2	6 13.57	2	53.005	0 43.29	+ 1.105	
	Hebe			9.4	6 56.86	2	51.900			Hebe—(3) Δ α h. m. s. / m. s. / ′
	(3)	45.0	57.5	10.0	9.57.50	1	39.860	3 45.03	—42.131	Sid. time 20 29 52.88 +3 45.06 —10
	(4)	47.0	59.6		12 59.60	2	52.916	0 42.93	+ 1.066	Δ ρ — .05 —
	Hebe	30.0	42.5	55.1	13 42.53	2	51.850			ρ + .18 +
	(3)	31.7	44.8	57.2	23 44.57	1	39.240	3 45.03	—42.171	Hebe—(4)
	(4)	33.0	46.0		26 46.00	2	52.075	0 43.60	+ 0.805	Sid. time 20 40 5.04 +0 43.54 + 0
	Hebe		29.6	42.0	27 29.60	2	51.270			Δ ρ .00
										ρ .19
	(3)	45.8	58.1	10.8	32 58.23	1	38.562	3 44.93	—42.631	Hebe—Weisse XVII, 18
	(4)	47.0	59.8		35 59.80	2	51.478	0 43.36	+ 0.426	Sid. time 21 5 35.43 —1 9.23 —16
	Hebe	30.6	43.1	55.8	36 43.16	3	51.052			Δ ρ — .14 +
	(3)	48.4	1.0	13.8	45 1.07	1	37.628	3 45.33	—42.663	ρ + .20 +
	(4)	50.2	3.0		45 3.00	2	50.428	0 43.40	+ 0.278	
	Hebe	34.0	46.2	59.0	48 46.40	2	50.150			

(Continued.)

HEBE.

ıte ; 847. erver	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.	
g. 25	(4)	42.0	54.5		20 58 54.50	1 40.550	+ 0 44.23	+ 0.040	
M.	Hebe	26.0	38.8	51.4	59 38.73	1 40.510			
	Weisse XVII, 18 .		48.0	0.5	21 0 48.00	3 45.140	— 1 9.27	+64.766	
	(4)	17.0	29.8		4 29.80	1 39.980	+ 0 44.00	— 0.180	
	Hebe		13.8	26.4	5 13.80	1 40.160			
	Weisse XVII, 18 .		23.0	35.5	6 23.00	3 44.360	— 1 9.20	+64.336	
g. 30	Weisse XVI, 1139	2.0	14.8	27.4	18 1 14.55	1 40.372	+ 4 26.98	—41.204	
M.	Hebe	29.0	41.6	54.0	5 41.53	2 51.435			Corr. of Chron. m. s. +3 14.44
	Weisse XVI, 1139	46.0	58.8	11.1	7 58.63	1 40.246	4 26.70	41.395	App't. α h. m. s. / App't. δ ° ′ ″
	Hebe	12.8	25.2	38.0	12 25.33	2 51.500			Weisse XVI, 1139 . . 16 59 56.75 / —11 49 31.96
	Weisse XVI, 1139	55.5	8.0	20.4	16 7.96	1 40.075	4 27.44	41.621	Hebe—Weisse XVI, 1139 Δ α m. s. / Δ δ ′ ″
	Hebe	22.8	35.4	48.0	20 35.40	2 51.555			Sid. time 18 24 20.41 +4 27.34 / — 10 38.20
	Weisse XVI, 1139	48.0	0.5	13.0	23 0.50	1 40.010	4 27.23	41.571	Δ ρ — .01 / — .48
	Hebe	15.0	27.8	40.4	27 27.73	2 51.540			p + .08 / + 3.30
	Weisse XVI, 1139	39.0	51.5	4.0	34 51.50	1 39.158	+ 4 28.37	—41.943	
	Hebe	7.0	19.6	32.0	39 19.87	2 50.960			
ıt. 1	Hebe	3.2	15.8	28.5	19 28 15.83	2 36.180			
M.	Weisse XVII, 155 .	29.7	41.2	53.2	31 41.37	1 27.805	— 3 25.54	—38.516	Corr. of Chron. m. s. +3 18.33
	Weisse XVII, 179 .			6.5	32 54.04	2 39.550	4 38.21	+ 3.375	
	Hebe	43.0	55.6	8.0	36 55.53	2 35.960			App't. α h. m. s. / App't. δ ° ′ ″
	Weisse XVII, 155 .	7.0	21.5	33.8	40 21.43	1 27.480	3 25.90	—38.621	Weisse XVII, 155 . . 17 9 20.87 / —12 8 21.85
	Weisse XVII, 179 .	21.0	33.8	46.2	41 33.67	2 38.985	4 38.14	+ 3.025	Weisse XVII, 179 . . 10 32.94 / 19 5.20
	Hebe	6.0	18.4	30.6	45 18.33	2 35.660			Hebe—Weisse XVII, 155 Δ α m. s. / Δ δ ′ ″
	Weisse XVII, 155 .	31.0	43.5	56.2	48 43.57	1 27.035	3 25.54	—38.766	Sid. time 19 53 41.28 —3 25.31 / — 9 58.19
	Weisse XVII, 179 .	44.0	56.0	8.8	49 56.27	2 38.520	4 37.94	+ 2.860	Δ ρ .03 / .64
	Hebe	27.2	39.8	52.6	20 1 39.87	2 35.365			p + .15 / + 3.15
	Weisse XVII, 155 .	52.8	5.4	18.0	5 5.40	1 26.242	3 25.53	—39.264	Hebe—Weisse XVII, 179
	Weisse XVII, 179 .	4.6	17.5	30.1	6 17.40	2 37.840	4 37.53	+ 2.475	Sid. time 19 53 41.28 —4 37.78 / + 0 42.44
	(7)	53.0	5.0	17.2	7 5.07	2 24.360			Δ ρ .00 / .04
	(8)	1.4	14.0	26.7	14 14.03	2 49.890			p + .15 / 3.15
	Hebe	33.0	45.0	57.6	19 45.20	2 34.780			
	Weisse XVII, 155 .	57.0	9.8	21.8	23 19.53	1 25.380	3 24.33	—39.541	
	Weisse XVII, 179 .	10.0	22.0	34.8	24 22.27	2 36.860	— 4.37.07	+ 2.080	
. 3	Hebe	54.0	6.5	18.9	18 14 6.47	2 38.930			
	Weisse XVII, 168 .	34.2	47.0	59.0	16 46.73	1 34.320	— 2 40.26	—34.751	
	Hebe	34.0	46.8	59.4	28 46.73	2 39.070			
	Weisse XVII, 168 .	14.0	26.0	39.2	31 26.60	1 33.970	2 39.87	35.241	Corr. of Chron. m. s. + 3 12.11
	Hebe	25.8	38.2	51.0	34 38.33	2 39.030			App't. α h. m. s. / App't. δ ° ′ ″
	Weisse XVII, 168 .	5.8	18.0	30.8	37 18.20	1 33.840	2 39.87	35.331	Weisse XVII, 168 . . 17 10 7.04 / —11 26 17.17
	Hebe	6.0	18.5	30.9	40 18.47	2 39.090			" 13 2 12.03 / 29 55.68
	Weisse XVII, 168 .	45.8	58.6	11.0	42 58.47	1 33.640	— 2 40.00	35.591	" 65 4 42.25 / 32 14.11
	Weisse XVII, 13, .	19.0	31.6	44.0	53 31.53	1 47.651	+ 5 16.10	21.512	Hebe—Weisse XVII, 168 Δ α m s. / Δ δ ′ ″
	Weisse XVII, 65, .	49.0	1.0	13.4	56 1.13	2 26.390	+ 2 46.50	12.632	Sid. time 18 57 38.72 —2 39.29 / — 9 9.81
	Hebe	35.2	47.7	0.0	58 47.63	2 39.022			Δρ — .01 / — .45
	Weisse XVII, 168 .	14.4	27.0	39.4	19 1 26.93	1 33.198	— 2 39.30	35.965	p + .11 / + 3.22
	Weisse XVII, 13 .	58.5	11.0	23.6	6 11.03	1 47.175	+ 5 16.24	21.816	
	Weisse XVII, 65 .	28.2	40.6	52.6	8 40.47	2 25.930	+ 2 46.80	12.920	
	Hebe	15.0	27.0	39.8	11 27.27	2 38.850			
	Weisse XVII, 168 .	55.8	6.0	18.8	14 6.87	1 32.832	— 2 39.60	36.159	

(Continued.)

HEBE.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic. tr.	Mic. revs.	Planet—Star. Δ α	Δ mic. revs.	Results.
		s.	s.	s.	h. m. s.			m. s.		
Sept. 3	Weisse XVII, 13	44.5	56.0	8.0	19 20 56.17	1	46.600	+ 5 17.70	—22.133	HEBE—Weisse XVII, 13
	HEBE	1.6	14.0	26.0	26 13.87	2	38.592			h. m. s. m. s. ′
M.	Weisse XVII, 168	39.0	51.8	4.0	28 51.60	1	32.308	— 2 37.73	36.425	Sid. time 19 22 37.83 +5 16.78 — 5 3
										Δρ — .01 —
										p + .13 +
	Weisse XVII. 13,	44.6	57.0	9.5	35 57.03	1	45.955	+ 5 17.07	22.511	
	HEBE	1.5	14.0	26.8	41 14.10	2	38.325			HEBE—Weisse XVII, 65
	Weisse XVII, 168	39.0	51.8	4.5	43 51.77	1	31.585	— 2 37.67	—36.881	Sid. time 19 08 19.56 +2 46.65 — 3 1
										Δρ .00 —
										p + .11 +
Sept. 4	HEBE	12.8	25.5	37.7	18 19 25.33	2	47.600			
	5845, B. A. C.	12.6	25.0	37.8	22 25.13	2	36.350	— 3 59.80	—11.250	m. s.
M.										Corr. of Chron. + 3 23.24
	HEBE	43.5	55.6	8.5	25 55.87	2	47.646			
	5845, B. A C.	45.5	55.6	8.5	29 55.77	2	36.132	3 59.90	11.514	App't α App't δ
										h. m. s. ° ′ ″
	HEBE	33.0	45.5	58.1	32 45.53	2	47.730			5845, B. A C . . . 17 12 16.31 —12 40 5
	5845, B. A. C.	32.5	45.0	57.9	36 45.13	2	36.010	3 59.60	11.720	
										HEBE—5845, B. A. C. Δ α
	HEBE	36.	48.4	1.0	39 48.47	2	47.675			h. m. s m. s.
	5845, B. A. C.	35.2	38.0	0.2	43 47.80	2	35.865	3 59.33	11.810	Sid. time 18 35 59.61 — 3 59.57 — 2 5
										Δρ .00 —
	HEBE	53.8	6.6	19.5	45 6.63	2	47.730			p + .08 +
	5845, B. A. C.	53.0	6.0	18.5	49 5.83	2	35.250	— 3 59.20	—11.980	
Sept. 6	HEBE	22.0	35.	47.5	18 77 34.83	3	46.570			
	5845, B. A. C.	36.6	48.8	1.2	59 48.87	1	27.540	— 2 14.04	—79.166	m. s.
M.										Corr. of Chron. + 3 25.30
	HEBE	32.6	45.0	57.5	19 3 45.03	3	46.570			
	5845, B. A. C.	47.0	59.4	12.0	5 59.47	6	27.235	2 14.44	79.471	App't. α App't. δ
										h. m. s. ° ′ ″
	HEBE	3.6	16.2	29.0	10 16.27	3	46.345			5845, B. A. C. . . . 17 12 16.28 —12 40 5
	5845, B. A. C.	19.0	31.6	44.0	12 31.53	1	27.108	2 15.26	79.373	
										HEBE—5845, B. A. C. Δ α
	HEBE	50.0	2.5	15.0	15 02.50	3	46.510			h. m. s. m. s.
	5845, B. A. C.	5.0	17.5	30.2	17 17.57	1	26.915	2 15.07	79.731	Sid. time 19 13 5.87 —2 14.66 —20 2
										Δρ — .03 —
										p + .11 +
	HEBE	31.7	44.1	56.8	21 44.20	3	46.480			
	5845, B. A. C.	46.0	58.6	11.4	23 58.67	1	26.750	— 2 14.47	—79.866	
										m. s.
										Corr. of Chron. +3 29.38
Sept.10	(10)	44.0	57.0	9.9	19 30 56.97	2	46.552	+ 1 55.70	+ 9.720	
	HEBE	40.0	52.5		32 52.67	2	36.832			App't. α App't. δ
M.										h. m. ° ′
	(9)	37.6	50.0	2.9	35 50.17	3	37.130	4 43.99	30.367	(10) . . . . . 17 15 —13 32
	(10)	26.0	38.4	51.2	38 38.53	2	46.040	1 55.63	9.282	(9) 17 12 13 37
	HEBE	22.0	34.0	46.5	40 34.16	2	36.758			HEBE—(10) Δ α Δ
										h. m. s. m. s. ′
	(9)	23.2	34.8	47.1	44 35.03	3	36.458	4 45.64	30.203	Sid. time 19 48 10.45 +1 56.11 +2 2
	(10)	11.8	23.6	37.0	47 24.13	2	45.390	1 56.54	9.140	Δρ .00
	HEBE	8.0	20.6	33.4	49 20.67	2	36.250			p .13
										HEBE—(9)
	(9)	59.2	11.8	24.6	51 11.87	3	36.120	4 44.93	29.995	19 52 06.59 +4 44.85 + 7 4
	(10)	47.0	0.0	12.9	54 0.23	2	45.090	+ 1 56.57	+ 8.970	Δρ .01
	HEBE	44.6	56.8	9.0	55 56.80	2	36.120			p .13
										m. s.
										Corr. of Chron. +3 34.00
Sept. 13	HEBE	18.3	30.8	43.4	19 8 30.83	2	36.540			
	Weisse XVII, 360	3.0	15.5	28.0	12 15.50	1	54.440	— 3 44.67	—12.241	App't. α App't.
M.										h. m. s. ° ′
	HEBE	9.7	22.4	35.0	31 22.37	2	36.366			Weisse XVII, 360 . . 17 20 29.17 —13 56 5
	Weisse, XVII, 360	54.2	6.5	19.2	35 6.63	1	53.947	3 43.26	12.560	
										HEBE—Weisse XVII, 360 Δ α Δ
	HEBE	37.0		2.1	37 49.55	2	36.340			h. m. s. m. s. ′
	Weisse XVII, 360	20.6	33.2	46.0	41 33.27	1	53.632	— 3 43.72	—12.849	Sid. time 19 29 28.25 —3 43.88 —3 1
										Δρ .00 —
										p + .11 +

HEBE.

ate; 847. erver	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.	
t. 14	Hebe	6.0	18.6	31.4	20 0 18.67	3 31.020			m. s.
f.	Weisse XVII, 360	46.0	58.4	11.0	2 58.47	1 45.988	— 2 39.80	—45.168	Corr. of Chron. +3 35.39
	Hebe	6.8	19.2	32.0	10 19.33	3 30.700			App't. α h. m. s. / App't. δ ° ′
-	Weisse XVII, 360	45.9	58.2	11.0	12 58.37	1 45.400	2 39.04	45.436	Weisse XVII, 360 . . 17 20 29.15 —13 56 50.3
	Hebe	52.6	5.0	17.8	20 5.13	3 30.366			Hebe—Weisse XVII, 360 Δ α h. m. s. / Δ δ ′ ″
	Weisse XVII, 360	31.3	44.0	56.4	22 43.90	1 45.100	2 38.77	45.402	Sid. time 20 29 6.13 —2 38.74 —11 51.2
	Hebe	6.0	18.9	31.0	45 18.63	3 38.500			Δ ρ + .05 — 1.0
	Weisse XVII, 360	44.2	57.0	9.6	47 56.93	1 52.490	2 38.30	46.146	p + .16 + 2.9
	Hebe	19.2	32.0	44.6	51 31.93	3 37.952			
	Weisse XVII, 360	57.0	9.7	22.5	54 9.73	1 51.978	— 2 37.80	—46.110	
t. 15	Hebe	36.3	49.0	1.6	19 32 48.97	2 38.335			
	Weisse XVII, 366	24.0	36.6	49.4	34 36.67	1 34.460	— 1 47.70	—34.016	m. s.
f.	Weisse XVII, 397	45.4	58.0	10.8	35 58.07	2 40.548	3 9.10	+ 2.213	Corr. of Chron. +3 37.24
	Hebe	28.6	41.0	53.9	38 41.17	2 38.275			App't. α h. m. s. / App't. δ ° ′ ″
	Weisse XVII, 366	17.0	29.2	41.8	40 29.33	1 34.175	1 48.16	—34.241	Weisse XVII, 366 . . 17 20 40.33 —14 7 32.1
	Weisse XVII, 397	38.2	51.0	3.8	41 51.00	2 40.280	3 9.83	+ 2.005	Weisse XVII, 397 . . 22 2.35 16 52.3
	Hebe	12.0	24.6	37.2	45 24.60	2 38.241			Hebe—Weisse XVII, 366 Δ α h. m. s. / Δ δ ′ ″
	Weisse XVII, 366	59.2	12.0	24.8	47 12.00	1 33.910	1 47.40	—34.472	Sid. time 19 45 59.67 —1 47 62 —8 47.1
	Weisse XVII, 397	21.0	33.5	46.4	48 33.63	2 40.130	3 9.03	+ 1.889	Δ ρ + .02 .5
	Hebe	22.2	35.0	47.8	52 35.00	2 39.360			p .13 + 3.0
	Weisse XVII, 366	9.7	22.0	35.0	54 22.23	1 34.972	1 47.23	—34.529	Hebe—Weisse XVII, 397
	Weisse XVII, 397	31.2	43.8	56.8	55 43.93	2 41.032	3 8.93	+ 1.672	Sid. time 20 3 18.36 —3 9.01 +0 28.6
	Hebe	2.4	14.8	27.0	20 9.14.73	1 40.210			Δ ρ .00 .0
	Weisse XVII, 397	10.4	22.7	35.5	12 22.87	1 41.695	— 3 8.14	+ 1.485	p + .14 3.0
	Hebe	37.8	50.5	3.0	19 2 50.43	2 37.870			
t 16	Weisse XVII, 397	43.9	56.5	8.0	4 56.47	1 39.698	— 2 6.03	—28.313	
f.	Hebe	6.8	19.2	32.0	6 19.33	2 37.912			
	Weisse XVII, 397	12.0	24.8	37.5	8 24.77	1 39.646	2 5.44	28.407	m. s.
	Hebe	45.8	58.6	11.0	10 58.57	2 37.888			Corr. of Chron. +3 36.67
	Weisse XVII, 397	51.2	4.8	17.0	13 04.33	1 39.520	2 5.86	28.509	App't. α h. m. s. / App't. δ ° ′ ″
	Hebe	33.7	46.2	59.0	17 46.30	2 37.820			Weisse XVII, 397 . . 17 22 2.34 —14 16 52.2
	Weisse XVII, 397	38.9	51.7	4.6	19 51.73	1 39.398	2 5 43	28.573	Hebe—Weisse XVII, 397 Δ α h. m. s. / Δ δ ′ s.
	Hebe	5.9	18.5	31.0	21 18.47	2 37.880			Sid. time 19 33 23.11 —2 5.40 —7 19.9
	Weisse XVII, 397	10.9	23.6	36.1	23 23.53	1 39.220	2 5.06	28.801	Δ ρ — .02 — .4
	(11)	11.7	24.2	37.0	26 24.30	1 47.360			p + .12 + 3.0
	(12)	12.5	25.0	37.8	28 25.10	3 38.450			
	Hebe	53.8	6.2	19.0	30 6.33	2 37.750			
	Weisse XVII, 397	58.3	11.0	23.5	32 10.93	1 39.014	— 2 4.60	—28.877	
	Hebe	31.6	43.5	56.2	43 43.73	1 39.000			
	(12)	36.4	49.0	1.8	50 49.07	2 39.015			
	Hebe	28.0	40.8	33.7	19 12 40.83	2 37.620			
t 17	Weisse XVII, 392		29.5	42.4	13 29.50	3 33.390	— 0 48.67	+25.765	
f.	(12)	28.4	41.2	54.0	19 41.20	2 37.305	6 0.37	— 0.315	
	Hebe	7.1	19.8	32.5	23 19.80	2 37.630			
	Weisse XVII, 392	55.0	7.9	20.6	24 07.83	3 33.192	0 48.03	+25.557	
	Weisse XVII, 464	11.0	23.6	36.4	26 23.67	3 39.490	3 3.87	+31.855	
	(12)	6.7	19.4	32.0	29 19.37	2 37.175	— 5 59.57	— 0.455	

(Continued.)

HEBE.

Date: 1847. Observer:	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	*w* *revs.*	m. s.	*revs.*	
Sept. 17	Hebe	53.6	6.0	18.8	19 31 6.13	2 37.510			Corr. of Chron. +3 36.88
	Weisse XVII, 392 .		54.2	6.8	31 54.20	3 32.850	— 0 48.07	+25.335	
M.	Weisse XVII, 464 .	57.5	10.0	22.8	34 10.10	3 39.260	3 3.97	+31.745	
	(12)	52.9	6.4	18.7	37 6.00	2 36.980	5 59.87	— 0.530	
	Hebe	23.0	35.8	48.6	39 35.80	2 37.340			
	Weisse XVII, 392 .	10.5	23.5	36.0	40 23.33	3 32.590	0 47.53	+25.245	
	Weisse XVII, 464 .		39.8	52.6	42 39.80	3 38.930	3 4.00	+31.585	
	(1)	22.2	35.0	47.9	45 35.03	2 36.616	5 59.23	— 0.724	
	Hebe	52.6	5.0	17.8	48 5.13	2 37.180			
	Weisse XVII, 392 .	39.4	52.0	4.8	48 52.07	3 32.240	0 46.94	+25.055	
	Weisse XVII, 464 .	55.6	8.5	21.2	51 8.43	3 38.570	3 3.30	+31.385	
	(12)	51.3	4.0	16.8	54 4.03	2 36.278	5 58.90	— 0.902	
	Hebe	48.5	1.0	13.8	20 3 1.10	1 39.200			
	Weisse XVII, 392 .	35.0	47.5	0.5	3 47.67	2 33.830	— 0 46.57	+24.625	
Sept. 20	Hebe	29.2	41.8	51.0	19 15 41.67	2 41.610			
	(13)		14.0	26.5	16 14.09	2 50.172	— 0 32.42	+ 8.562	
M									Corr. of Chron. +3 37.55
	Hebe	29.2	42.0	54.6	19 41.93	2 41.690			
	(13)		11.6	24.6	20 11.69	2 50.130	0 29.76	8.440	
	Hebe	21.5	34.0	47.0	22 34.17	2 41.660			
	(13)			16.8	23 4.27	2 49.970	0 30.10	8.310	
	Hebe	56.8	9.5	22.0	33 9.43	2 41.494			
	(13)	27.0	39.6	52.4	33 39.67	2 49.640	0 30.24	8.146	
	Hebe	48.0			49 0.62	2 41.320			
	(14)	18.5	29.5	42.0	49 30.10	3 31.330	— 0 29.48	+20.151	
Sept. 21	(13)	14.5	27.0		19 14 27.05	1 26.910	+ 0 38.40	—21.196	
	Hebe.	53.0	5.4		15 5.45	2 17.965			
M.	5949, B. A. C. . .	5.3	18.0	30.8	18 18.03	3 44.750	— 3 12.58	+56.780	
	(14)	24.6	37.0	50.0	20 37.20	1 38.720			Corr. of Chron. +3 38.28
	Hebe.	4.5	16.8	29.0	21 16.77	2 17.940			
	5949, B. A. C. . .		26.8	39.1	24 26.85	3 44.600	— 3 10.08	+56.655	
	(13)	8.0	20.8	33.0	28 20.60	1 26.460	+ 0 40.23	—21.601	
	Hebe.	48.6	0.5	13.4	29 0.83	2 17.920			
	5949, B. A. C. . .	59.0	11.6	24.4	32 11.67	3 44.140	— 3 10.84	+56.215	
	(13)	4.5	17.0	29.8	36 17.10	1 26.290	+ 0 41.03	—21.651	
	Hebe	45.6	58.0	10.8	36 58.13	2 17.800			
	5949, B. A. C. . .	55.5	8.4	21.0	40 8.30	3 44.035	— 3 10.17	+56.230	
	(13)	34.0	46.3	59.0	43 46.43	1 26.010	+ 0 41.57	—21.851	
	Hebe.	15.2	28.0	40.8	44 28.00	2 17.720			
	5949, B. A. C. . .	25.5	38.0	50.8	47 38.10	3 43.837	— 3 10.10	+56.112	
	Hebe.	39.6	52.3	5.0	56 52.30	1 27.688			
	5949, B. A. C. . .	58.0	0.9	13.8	60 0.90	2 53.451	— 3 8.60	+55.901	
Sept. 22	Hebe.	14.0	26.8	39.3	19 13 26.70	2 34.675			
	5949, B. A. C. . .	12.5	25.2	38.0	15 25.23	3 31.930	— 1 58.53	+27.255	
M.									
	Hebe.	45.0	57.7	10.6	17 57.76	2 34.600			
	5949, B. A. C. . .	43.2	56.8	9.6	19 56.53	3 31.928	1 58.76	27.323	
	Hebe.	50.4	2.8	15.2	22 2.80	2 34.660			
	5949, B. A. C. . .	48.9	1.5	14.2	24 1.53	3 31.775	1 58.73	27.110	
	Hebe.	36.4	49.0	1.8	27 49.07	2 34.638			
	5949, B. A. C. . .	34.7	47.5	0.2	29 47.47	3 31.580	— 1 58.40	+26.937	

Results.

	App't. α	App
	h. m. s	° ′
Weisse XVII, 392 . .	17 21 51.82	—14 38
Weisse XVII, 464 . .	24 7.42	40

Hebe—Weisse XVII, 392

	Δ α	
Sid. time 19 39 55.01	m. s. —0 47.63	′ +6
Δ ρ	+ .01	
ρ	+ .12	

Hebe—Weisse XVII, 464

Sid. time 19 39 8.59	—3 3.78	+8
Δ ρ	+ .02	
ρ	+ .12	

Hebe—(13)

	Δ α	
Sid. time 19 26 24.35	m. s. —0 30.64	′ +2
Δ ρ	.00	
ρ	.11	

	App't. α	App
	h. m. s.	° ′
5949, B. A. C. . . .	17 28 52.33	—15 17

Hebe (13)

	Δ α	
Sid. time 19 35 6.38	m. s. +0 40.31	′ —5
Δ ρ	— .01	—
ρ	+ .12	+

Hebe—5949, B. A. C.

Sid. time 19 37 35.19	—3 10.39	+14
Δ ρ	.02	
ρ	+ .12	

(Continued.)

HEBE.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ a	Δ mic.	Results.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.	
pt. 22	Hebe	7.8	20.1	32.8	19 32 20.23	2 34.470			Corr. of Chron. m. s. +3 39.76
M.	5949, B. A. C. .	5.4	18.2	30.8	34 18.13	3 31.505	— 1 57.90	+27.030	
									App't. a h. m. s. / App't. δ ° ′ ″
	Hebe	58.0	10.6	23.8	36 10.80	2 34.380			
	5949, B. A. C. .	56.0	8.6	21.5	38 8.70	3 31.345	1 57.90	26.960	5949, B. A. C. 17 28 52.31 / −15 17 38.71
	Hebe	49.0	0.2	12.7	51 0.63	2 34.290			Hebe—5949, B. A. C. Δ a m. s. / Δ δ ′ ″
	5949, B. A. C. .	45.2			52 57.86	3 30.789	1 57.23	26.485	Sid. time 19 38 48.47 −1 57.91 / + 6 52.91
									Δ ρ + .01 / .44
	Hebe	57.4	10.0	22.4	55 9.93	2 34.150			p .12 / 3.04
	5949, B. A. C. .	53.8	7.0		59 7.01	3 30.595	1 57.08	26.440	
	Hebe	8.0	20.5	33.0	20 0 20.50	2 34.125			
	5949, B. A. C. .	4.6	17.0	29.9	2 17.16	3 30.515	— 1 56.66	+26.385	

IRIS.

Date; 1847. Observer	OBJECT	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	tr. revs.	m. s.	revs.	
Oct. 3 M.	Iris	55.8	8.0	20.8	19 59 8.20	2 45.530			
	Weisse XIX, 1319	56.6	9.5	21.8	20 0 9.30	2 32.250	— 1 1.10	—13.280	
	Iris	58.7	11.5	23.8	20 4 11.33	2 45.360			
	Weisse XIX, 1319	0.0	12.5	25.4	5 12.63	2 32.160	1 1.30	13.200	
	Iris	45.0	57.5	10.0	8 57.50	2 45.430			Corr. of Chron. m. s. +3 57.20
	Weisse XIX, 1319	46.0	59.0	11.6	9 58.87	2 32.090	1 1.37	13.340	
	Iris	52.0	4.6	17.6	13 4.73	2 45.590			App't. α / App't. δ
	Weisse XIX, 1319	53.5	6.5	19.0	14 6.33	2 32.310	— 1 1.60	—13.280	Weisse XIX, 1259: h. m. s. 19 49 52.77 / ° ′ —14 24
	Weisse XIX, 1259	11.0	23.6	36.8	20 23.80	2 46.440	+ 1 39.30	+ 0.950	1319: 52 34.30 / 21
	Iris	50.7	3.0	15.6	22 3.10	2 45.490			Iris—Weisse XIX, 1259
	Weisse XIX, 1319	51.8	4.5	17.2	23 4.50	2 32.226	— 1 1.40	—13.264	h. m. s. / Δ α m. s. / ′
	Weisse XIX, 1259	34.0	46.8	59.4	31 46.73	2 46.210	+ 1 39.57	+ 0.930	Sid. time 20 57 28.14 / +1 40.23 / + 0
	Iris	13.7	26.2	39.0	33 26.30	2 45.280			Δ ρ .00
	Weisse XIX, 1319	15.0		40.6	34 27.80	2 32.030	— 1 1.50	—13.250	p .07
	Weisse XIX, 1259	44.4	57.0	9.0	43 56.80	2 46.468	+ 1 39.70	+ 0.888	Iris—Weisse XIV, 1319
	Iris	24.1	36.0	49.4	45 36.50	2 45.580			h. m. s. / m. s. / ′
	Weisse XIX, 1319	25.0	37.8	50.6	46 37.80	2 32.326	— 1 1.30	—13.254	Sid. time 20 36 30.14 / —1 0.95 / —3
	Weisse XIX, 1259	35.8	48.2	0.8	21 16 48.27	2 46.330	+ 1 41.06	+ 0.860	Δ ρ .00 / —
	Iris	16.8	29.2	42.0	18 29.33	2 45.470			p .05 / +
	Weisse XIX, 1319	16.4	29.2	42.0	19 29.20	2 32.230	— 0 59.87	—13.240	
	Weisse XIX, 1259	5.3	18.0	30.5	26 17.93	2 46.190	+ 1 41.54	+ 0.930	
	Iris	46.8	59.0	12.6	27 59.47	2 45.260			
	Weisse XIX, 1319	45.8	58.5	11.5	28 58.60	2 32.060	— 0 59.13	+13.200	
Oct. 25 M.	Weisse XX, 284	37.2	50.2	2.5	20 30 49.97	2 38.090	+ 1 20.86	—12.526	
	Iris	58.0	11.0	23.5	32 10.83	2 50.616			
	Weisse XX, 284	6.8	19.2	31.6	35 19.20	2 37.906	1 21.10	12.532	
	Iris	27.6	40.2	53.1	36 40.30	2 50.438			
	Weisse XX, 284	34.6	47.1	0.4	41 47.37	2 36.415	1 21.85	12.444	
	Iris	56.8	9.2	21.6	43 9.20	2 48.859			
	Weisse XX, 284	26.0	38.6	51.2	44 38.60	2 36.370	1 21.63	12.471	Corr. of Chron. m. s. +4 43.38
	Iris	47.5	0.2	13.0	46 0.23	2 48.841			App't. α / App't. δ
	Weisse XX, 284	5.6	18.1	30.8	48 18.17	2 36.350	+ 1 21.56	12.463	Weisse XX, 284: h. m. s. 20 11 55.71 / ° ′ 13 49
	Iris	27.2	39.8	52.2	49 39.73	2 48.813			
	Weisse XX, 268	44.0	56.8	9.8	22 49 56.87	2 39.882			Iris—Weisse XX, 284
	Weisse XX, 284	23.8	36.2	48.5	50 36.17	1 46.395	— 0 39 30	23.628	h. m. s. / Δ α m. s. / ′
	Weisse XX, 268	14.6	27.0	40.0	51 27.20	2 39.790			Sid. time 20 46 15.44 / +1 21.40 / —3
	Weisse XX, 284	54.0	6.2	19.3	52 6.50	1 46.459	0 39.30	23.472	Δ ρ .00 / —
	Weisse XX, 268	11.0	23.4	36.4	53 23.60	2 39.584			p .04 / +
	Weisse XX, 284	51.4	3.8	16.0	54 3.72	1 46.373	0 40.13	23.352	
	Weisse XX, 268	21.0	33.5	46.2	58 33.57	2 39.480			
	Weisse XX, 284	0.5	13.1	25.2	59 12.93	1 46.162	0 39.36	23.459	
	Weisse XX, 268	1.1	14.0	27.0	23 1 14.03	2 39.440			
	Weisse XX, 284	40.6	53.1	6.2	1 53.30	1 45.975	— 0 39.27	—23.606	
Oct. 26 H.	Weisse XX, 284	1.0	13.5	26.1	20 31 13.53	2 29.675	+ 2 35.80	— 2.385	
	Iris	36.8	49.2	2.0	33 49.33	2 32.060			

(Continued.)

IRIS.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.
Oct. 26	Weisse XX, 284 .	17.7	30.4	43.1	20 35 30.40	2 29.630	+ 2 35.90	— 2.121
H.	Iris	53.5	6.2	19.2	38 6.30	2 31.751		
	Weisse XX, 284 .	44.0	56.2	9.2	40 56.47	2 29.553	2 36.76	2.197
	Iris	20.6	33.1	46.0	43 33.23	2 31.750		
	Weisse XX, 284 .	23.5	36.1	48.8	50 36.13	2 29.250		
	Iris	0.5	13.0	25.5	53 13.00			
	Weisse XX, 284 .	39.0	51.2	4.0	54 51.40	2 29.100	+ 2 37.47	— 2.115
	Iris	16.4	28.9	41.3	57 28.87	2 31.215		
Oct. 27	Weisse XX, 387 .	38.5	51.0	4.0	20 12 51.17	2 48.633	+ 0 8.26	+21.273
H.	Iris		*59.0	12.5	12 59.43	2 27.360		
	Weisse XX, 387 .	56.5	9.2	22.1	14 9.27	2 48.633	0 9.23	21.290
	Iris	6.0	18.5	31.0	14 18.50	2 27.343		
	Weisse XX, 387 .	37.0	49.2	2.3	16 49.50	2 48.633	0 9.03	21.297
	Iris	46.4	58.2	11.0†	16 58.53	2 27.336		
	Weisse XX, 387 .	37.6	50.0	2.8	17 50.13	2 48.633	0 9.20	21.289
	Iris	46.5	59.5	12.0	17 59.33	2 27.344		
	Weisse XX, 387 .	48.4	1.2	13.5	19 1.03	2 48.633	0 9.77	21.271
	Iris	58.5		23.1	19 10.80	2 27.362		
	Weisse XX, 387 .	13.0	25.5	38.1	20 25.53	2 48.633	0 9.20	21.338
	Iris	22.0	35.0	47.2	20 34.73	2 27.295		
	Weisse XX, 387 .	20.0	32.1	45.0	21 32.37	2 48.633	0 9.56	21.390
	Iris	29.3	42.0	54.5	21 41.93	2 27.243		
	Weisse XX, 387 .	23.0	35.9	48.4	22 35.77	2 48.633	0 8.93	21.390
	Iris	32.0	45.0	57.8	22 44.70	2 27.243		
	Weisse XX, 387 .	34.1	47.1	59.2	23 46.80	2 48.633	+ 0 9.67	+21.461
	Iris	44.4	56.5	8.5	20 23 56.47	2 27.172		
Oct. 28	Weisse XX, 387 .	54.4	6.5	20.0	20 16 6.97	2 53.025	+ 1 26.73	+32.293
H.	Iris	21.0	33.6	46.5	17 33.70	1 50.873		
	Weisse XX, 387 .	48.5	1.1	13.6	19 1.07	2 52.971	1 27.03	32.306
	Iris	15.6	28.0	40.7	20 28.10	1 50.806		
	Weisse XX, 387 .	48.8	1.5	14.1	22 1.47	2 52.906	1 26.90	32.255
	Iris	16.0	28.4	40.7	23 28.37	1 50.792		
	Weisse XX, 387 .	42.4	54.8	8.2	24 55.13	2 52.914	1 26.80	32.343
	Iris	9.3	22.0	34.5	26 21.93	1 50.712		
	Weisse XX, 387 .	13.7	26.4	39.1	27 26.40	2 52.864	1 27.50	32.310
	Iris	41.1	54.0	6.6	28 53.90	1 50.695		
	Weisse XX, 387 .	32.3	45.1	57.5	20 29 44.97	2 52.835	+ 1 27.30	+32.271
	Iris	59.5	12.5	24.8	31 12.27	1 50.705		
Oct. 29	Weisse XX, 387 .	56.5	9.0	21.6	20 10 9.03	3 36.782	+ 2 45.24	+43.831
H.	Iris	41.5	54.2	7.1	12 54.27	2 22.946		

Results.

Corr. of Chron. m. s. +4 32.13

	App't. α	App't. δ
	h. m. s.	° ′ ″
Weisse XX, 284 . .	20 11 55.69	—13 49 21.

Iris—Weisse XX, 284	Δ α	Δ δ
	h. m. s.	m. s.	′ ″
Sid. time	20 47 46.56	+ 2 36.48	— 0 33.
	Δ ρ	.00	— .
	p	+ .04	+ 3.

Corr. of Chron. m. s. +4 32.92

	App't. α	App't. δ
	h. m. s.	° ′ ″
Weisse XX, 387 . .	20 15 38.25	—13 52 41.

Iris—Weisse XX, 387	Δ α	Δ δ
	h. m. s.	m. s.	′ ″
Sid. time	20 23 28.96	+ 0 9.20	+ 5 27.
	Δ ρ	.00	.
	p	+ .01	3.

* Recorded 9s.
† Recorded 1s.

Corr. of Chron. m. s. +4 34.08

	App't. α	App't. δ
	h. m. s.	° ′ ″
Weisse XX, 387 . .	20 15 38.23	—13 52 41.

Iris—Weisse XX, 387	Δ α	Δ δ
	h. m. s.	m. s.	′ ″
Sid. time	20 29 13.79	+ 1 27.04	+ 8 16.
	Δ ρ	.00	.
	p	.01	3.

IRIS.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	revs.	m. s.	revs.	
Oct. 29 H.	Weisse XX, 387	59.2	12.0	24.5	20 14 11.90	3 36.678	+ 2 45.70	+43.932	Corr. of Chron. m. s. +4 35.53
	Iris	45.0	57.6	10.2	16 57.60	2 22.741			
	Weisse XX, 387	48.4	1.5	14.0	18 1.30	3 36.560	2 45.97	43.774	App't. α h. m. s. / δ — Weisse XX, 387 . . 20 15 38.22 / —13
	Iris	34.8	47.0	0.0	20 47.27	2 22.791			
	Weisse XX, 387	38.6	51.5	4.0	22 51.37	3 36.453	2 45.86	43.629	Iris—Weisse XX, 387 Δ α h. m. s. / m. s.
	Iris	24.6	37.1	50.0	24 37.23	2 22.650			Sid. time 20 25 28.93 + 2 45.78 +
	Weisse XX, 387	31.8	44.5	57.2	26 44.50	3 36.465	+ 2 46.13	+43.921	Δ ρ .00
	Iris	18.0	30.5	43.4	29 30.63	2 22.539			ρ .01
Nov. 2 H.	Weisse XX, 545	49.5			20 57 49.50	2 46.951	+ 2 3.00	+12.553	
	Iris	52.5			59 52.50	2 34.398			
	Weisse XX, 545	15.7	28.0	40.4	21 1 28.03	2 46.958	2 3.80	12.699	
	Iris	19.3	31.8	44.4	3 31.83	2 34.259			
	Weisse XX, 545	21.0	33.5	46.2	6 33.57	2 46.649	2 3.73	12.441	
	Iris	24.8	37.2	49.9	8 37.30	2 34.208			
	Weisse XX, 545	57.0	9.5	22.5	10 9.67	2 46.335	2 3.90	12.268	Corr. of Chron. m. s. +4 37.63
	Iris	0.7	13.0	27.0	12 13.57	2 34.067			
	Weisse XX, 545	27.0	39.6	52.5	14 39.70	2 46.628	2 4.40	12.820	App't. α h. m. s. / δ — Weisse XX, 545 . . . 20 21 49.14 / —13
	Iris	31.6	44.0	56.7	16 44.10	2 33.808			
	Weisse XX, 545	19.6	31.8	44.6	18 32.00	2 46.326	2 3.77	12.542	Iris—Weisse XX, 545 Δ α h. m. s. / m. s.
	Iris	23.5	35.3	48.5	20 35.77	2 33.784			Sid. time 21 25 27.13 +2 4.45 +
	Weisse XX, 545	54.6	7.0	20.0	23 7.20	2 46.314	2 4.87	12.609	Δ ρ .00
	Iris	59.6	12.0	24.6	25 12.07	2 33.705			ρ .06
	Weisse XX, 545	37.0	49.3	2.0	27 49.43	2 46.066	2 4.67	12.494	
	Iris	41.5	54.0	6.8	29 54.10	2 33.572			
	Weisse XX, 545	36.0	48.7	1.7	31 48.80	2 46.144	2 5.83	12.807	
	Iris	42.0	54.5	7.4	33 54.63	2 33.337			
	Weisse XX, 545	8.5	21.0	34.0	35 21.17	2 46.156	2 5.70	12.851	
	Iris	14.0	26.9	39.7	37 26.87	2 33.305			
	Weisse XX, 545	43.7	56.1	9.5	38 56.43	2 46.032	+ 2 5.34	+12.797	
	Iris	49.0	1.7	14.6	41 1.77	2 33.235			
Nov. 3 H.	Weisse XX, 545	43.5	56.5	9.1	20 35 56.37	3 30.885	+ 3 26.48	+25.940	Corr. of Chron. m. s. + 4 37.25
	Iris	10.5		35.2	39 22.85	2 34.940			
	Weisse XX, 545	32.5	44.9	57.7	41 45.03	3 30.688	3 26.37	25.951	App't. α h. m. s. / δ — Weisse XX, 545 . . . 20 21 49.12 / —13
	Iris	58.8	11.3	24.1	45 11.40	2 34.732			
	Weisse XX, 545	33.5	46.0	58.5	46 46.00	3 30.512	3 27.13	25.829	Iris—Weisse XX, 545 Δ α h. m. s. / m. s.
	Iris	0.5	12.9	26.0	50 13.13	2 34.678			Sid. time 20 54 32.54 +3 26.84 +
	Weisse XX, 545	5.0	17.5	30.2	51 17.57	3 30.536	3 27.10	25.955	Δ ρ .00
	Iris	32.0	44.5	57.5	54 44.67	2 34.576			ρ .03
	Weisse XX, 545	24.7	37.1	50.0	56 37.27	3 30.495	+ 3 27.13	+26.108	
	Iris	52.0	4.0	17.2	21 0 4.40	2 34.382			
Nov. 5 H.	Iris	42.1	55.0	7.1	21 7 54.73	3 23.228			
	Weisse XX, 779	57.0	9.8	22.2	10 9.67	2 26.774	— 2 14.94	—26.249	
	Iris	12.5	25.0	38.0	12 25.17	3 23.097			
	Weisse XX, 779	27.2	40.1	52.2	14 39.83	2 26.774	2 14.66	26.318	

(Continued.)

IRIS.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.	
Nov. 5	Iris	52.0	4.5	17.1	21 16 4.53	3 22.988			Corr. of Chron. + 4 37.52
H.	Weisse XX, 779 .	6.5	19.1	31.5	18 19.03	2 26.735	— 2 14.50	—26.248	
	Iris	22.2	34.7	47.4	20 34.77	3 22.872			App't. α h. m. s. / App't. δ ° ′ ″
	Weisse XX, 779 .	36.5	49.0	1.6	22 49.03	2 26.602	2 14.26	26.265	Weisse XX, 779 . . . 20 30 23.59 —13 11 1.50
	Iris	51.6	4.0	16.8	26 4.13	3 22.672			Iris—Weisse XX, 779 / Δ α m. s. / Δ δ ′ ″
	Weisse XX, 779 .	6.0	18.5	31.2	28 18.57	2 26.478	2 14.44	26.189	Sid. time 21 26 44.37 —2 14.14 — 6 41.97
	Iris	28.9	41.2	54.0	32 41.37	3 22.410			Δ ρ .00 — .31
	Weisse XX, 779 .	42.0	54.7	7.0	34 54.57	2 26.380	2 13.20	26.025	p + .06 + 3.45
	Iris	50.7	3.2	15.8	39 3.23	3 22.163			
	Weisse XX, 779 .	3.5	16.1	29.0	41 16.20	2 26.290	— 2 12.97	—25.888	
Nov. 11	Weisse XX, 923 .	38.5	51.2	3.2	22 14 50.97	2 35.118	+ 1 23.30	— 9.355	Corr. of Chron. + 4 37.88
H.	Iris	1.8	14.0	27.0	16 14.27	2 44.473			
	Weisse XX, 923 .	56.1	8.5	21.0	19 8.53	2 34.982	1 22.94	9.328	App't. α h. m. s. / App't. δ ° ′ ″
	Iris	19.0	31.4	44.0	20 31.47	2 44.310			Weisse XX, 923 20 35 49.34 —12 50 26.50
	Weisse XX, 923 .	58.5	11.0	23.1	22 10.87	2 34.902	1 23.23	9.394	Iris—Weisse XX, 923 / Δ α m. s. / Δ δ ′ ″
	Iris	21.5	34.0	46.8	23 34.10	2 44.296			Sid. time 22 30 14.57 +1 23.31 — 2 22.71
	Weisse XX, 923 .	25.5	38.0	50.5	25 38.00	2 34.852	1 23.10	9.220	Δ ρ .00 — .14
	Iris	48.5	1.0	13.8	27 1.10	2 44.072			p .11 + 3.25
	Weisse XX, 923 .	54.8	7.2	20.0	30 7.33	2 34.751	1 23.54	9.149	
	Iris	17.8	31.0	43.8	31 30.87	2 43.900			
	Weisse XX, 923 .	12.0	24.8	37.0	33 24.60	2 34.554	+ 1 23.77	— 9.297	
	Iris	36.0	48.3	0.8	34 48.37	2 43.857			
Nov. 17	B. A. C. 7242 . .	37.0	49.1	1.8	23 18 49.30	1 43.030	+ 2 2.60	—58.586	Corr. of Chron. +4 35.74
H.	Iris	39.1	52.0	4.6	20 51.90	3 41.480			
	B. A. C. 7242 . .	14.0	26.0	39.0	22 26.33	1 42.745	2 2.70	58.701	App't. α h. m. s. / App't. δ ° ′ ″
	Iris	16.6	29.0	41.5	24 29.03	3 41.310			7242, B. A. C . . . 20 44 45.56 —12 8 34.45
	B. A. C. 7242 . .	23.5	36.0	48.5	25 36.00	1 42.995	2 3.40	58.461	Iris—7242, B. A. C. / Δ α m. s. / Δ δ ′ ″
	Iris	27.0	39.2	52.0	27 39.40	3 41.320			Sid. time 23 32 1.07 + 2 3.11 —14 58.71
	B. A. C. 7242 . .	41.3	53.8	6.2	28 53.77	1 42.867	2 3.33	58.444	Δ ρ — .04 — .95
	Iris	44.5	57.0	9.8	30 57.10	3 41.175			p + .15 + 3.07
	B. A. C. 7242 . .	54.2	6.8	19.1	31 6.70	1 42.728	+ 2 3.53	—58.330	
	Iris	57.5	10.2	23.0	33 10.23	3 41.922			
Nov. 20	Iris	54.8		20.2	23 8 7.50	2 28.655			Corr. of Chron. +4 32.88
I.	B. A. C. 7296 . .	50.8		15.8	10 3.30	3 36.562	— 1 55.80	+37.902	
	Iris	19.2	32.0	44.2	11 31.80	2 28.501			App't. α h. m. s. / App't. δ ° ′ ″
	B. A. C. 7296 . .	13.8	27.0	40.0	13 26.93	3 36.180	1 55.13	37.674	7296, B. A. C. . . . 20 53 41.21 —12 17 12.09
	Iris	3.5	16.5	29.0	15 16.33	2 28.205			Iris—7296, B. A. C. / Δ α m. s. / Δ δ ′ ″
	B. A. C. 7296 . .	59.0	11.5	24.0	17 11.50	3 36.162	1 55.17	37.952	Sid. time 23 17 54.26 —1 55.23 + 9 54.39
	Iris	17.5	30.0	42.2	18 29.90	2 28.065			Δ ρ + .02 .54
	B. A. C. 7296 . .	12.4	25.0	37.5	20 24.97	3 36.937	— 1 55.07	+37.867	p — .13 3.08

IRIS.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.	Results.
		s.	s.	s.	h. m. s.	*w.* *revs.*	m. s.	*revs.*	m. s.
Dec. 18	Lal. 42558 . . .				0 55 32.37	3 45.582	+ 1 22.70	+59.144	Corr. of Chron. + 4 26.00
H.	Iris				56 55.07	1 46.574			
	Lal. 42558 . . .				58 16.60	3 45.461	1 22.67	59.255	*Appt. α* *App*
	Iris				59 39.27	1 46.342			h. m. s. ° ′
	Lal. 42558 . . .				1 1 0.73	3 45.331	1 22.44	59.308	42558 Lal. . . . . 21 42 38.96 — 8 53
	Iris				2 23.17	1 46.159			Iris—42558 Lal. Δ α
	Lal. 42588 . . .				3 44.40	3 45.215	1 22.90	59.366	h. m. s. m. s. ′
	Iris				5 7.30	1 46.985			Sid. time 1 7 0.61 +1 22.88 +15
	Lal. 42588 . . .				7 24.53	3 45.042	+ 1 23.70	+59.535	Δ ρ .05
	Iris				8 48.23	1 45.643			*p* .15

FLORA.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α	Δ mic.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.
Dec. 3 M.	Weisse IV, 733	4.7	17.0	29.8	6 3 17.17	2 43.816	+ 0 52.36	+19.434
	Flora	57.0	9.5	22.1	4 9.53	1 54.523		
	Weisse IV, 733	41.0	53.5	6.1	5 53.53	2 43.845	0 51.64	19.505
	Flora	32.2	45.1	58.2	6 45.17	1 54.481		
	Weisse IV, 733	37.0	49.8	1.5	7 49.43	2 43.834	0 52.14	19.635
	Flora	29.0	41.5	54.2	8 41.57	1 54.340		
	Weisse IV, 733	45.2	58.1	11.0	10 58.10	2 43.612	0 52.07	19.480
	Flora	28.0	50.0	2.5	11 50.17	1 54.273		
	Weisse IV, 733	47.0	59.5	12.1	12 59.53	2 43.460	0 52.00	19.376
	Flora	39.5	51.0	4.1	13 51.53	1 54.225		
	Weisse IV, 783	55.5	8.0	20.5	17 8.00	2 43.600	+ 0 51.67	+19.502
	Flora	47.5	59.5	12.0	17 59.67	1 54.221		
Dec. 4 M.	Flora	50.2	2.5	15.2	23 26 2.63	2 49.780		
	Weisse IV, 824	12.5	25.0	38.5	30 25.33	1 53.960	— 4 22.70	—25.961
	Flora	30.2	42.5	55.0	35 42.57	3 45.918		
	Weisse IV, 824	37.8	10.5	23.5	39 10.60	1 54.710		
	Flora	25.0	37.5	50.6	43 37.70	2 50.820		
	Weisse IV, 824	49.2	2.0	15.2	23 48 2.23	1 55.168	— 4 24.43	—25.793
	Flora	31.6	44.0		0 1 44.16			
	Weisse IV, 829	55.8	8.0		5 8 16	1 56.068		
Dec. 6 M.	Flora	45.5	57.6	9.8	0 29 57.63	2 57.475		
	Weisse IV, 824	22.8	35.0	47.5	36 35.10	2 49.540	— 6 37.47	— 7.935
	Flora	3.8	18.0	30.6	42 17.47	2 57.812		
	Weisse IV, 794			20.0	47 7.45	1 58.940*	4 49.98	29.013
	Weisse IV, 824				49	2 50.072		
	Flora	36.0	49.3	1.5	53 48.93	2 58.012		
	Weisse IV, 794	26.0	39.0	51.6	58 38.86	1 59.070	4 49.93	29.083
	Weisse IV, 824		28.0	40.6	1 0 27.86	2 50.053	6 38.93	7.959
	Flora	36.0	48.8	0.6	5 48.47	2 58.128		
	Weisse IV, 794	26.0	39.0	51.5	10 38.83	1 59.410	4 50.36	28.859
	Weisse IV, 824	15.0	27.8	40.8	12 27.87	2 50.332	6 39.40	7.796
	Flora	34.5	47.5	59.8	16 47.27	2 58.270		
	Weisse IV, 794	25.2	38.0	50.5	21 37.90	1 59.600	4 50.63	28.811
	Weisse IV, 824	15.0	27.2	40.5	23 27.57	2 50.425	— 6 40.30	— 7.845
Dec. 7 I.	* α	35.6	48.5	0.8	1 39 48.30	3 48.890	+ 1 13.40	—62.656
	Flora	48.8	1.5	14.8	41 1.90	1 46.370		
	* α	48.2	0.5	13.8	43 0.83	3 48.930	1 13.70	62.696
	Flora	2.0	14.5	27.1	44 14.53	1 46.370		
	* α	17.8	30.0	42.0	46 29.93	3 49.048	1 13.60	62.752
	Flora	31.0	43.6	56.0	47 43.53	1 46.432		
	* α	24.0	36.7	49.6	2 12 36.77	3 48.930	1 12.23	62.928
	Flora	36.0	49.4	1.6	13 49.00	1 46.138		
	* α	39.2	50.8	2.6	34 50.83	3 49.070	+ 1 11.24	+63.074
	Flora	49.4	2.0	14.8	26 2.07	1 46.432		

Results.

Corr. of Chron. +4 31.40

	App't. α	App't. δ
	h. m. s.	° ′ ″
Weisse IV, 733	4 33 30.74	+14 1 39.

Flora—Weisse IV, 733	Δ α	Δ δ
	h. m. s.	m. s.	′ ″
Sid. time 6 15 4.34	+0 52.15	+ 4 59.
Δ ρ	.00	.
p	.01	4.

Corr. of Chron. —4 29.12

	App't. α	App't. δ
	h. m. s.	° ′ ″
Weisse IV, 824	4 37 58.75	+14 14 49.

Flora—Weisse IV, 824	Δ α	Δ δ
	h. m. s.	m. s.	′ ″
Sid. time 23 39 19.28	—4 23.56	— 6 37.
Δ ρ	+ .02	— .
p	— .47	+ 5.

Corr. of Chron. +4 26.57

	App't. α	App't.
	h. m. s.	° ′
Weisse IV, 824	4 37 58.77	+14 14 49.
Weisse VI, 794	36 9.56	20 13.

Flora—Weisse IV, 824	Δ α	Δ δ
	h. m. s.	m. s.	′ ″
Sid. time 1 1 2.14	— 6 39.02	— 2 1.
Δ ρ	.00	— .
p	.39	+ 4.

Flora—Weisse VI, 794	Δ α	Δ δ
	h. m. s.	m. s.	′ ″
Sid. time 1 4 7.10	— 4 50.22	— 7 24.
Δ ρ	.00	— .
p	.39	+ 4.

Corr. of Chron. +4 26.45

	App't. α	App't. δ
	h. m.	° ′
* α	0 4	+14 30

Flora—* α	Δ α	Δ δ
	h. m. s.	m. s.	′ ″
Sid. time 2 3 0.62	+ 1 12.83	—16 5.

* Recorded 59s.

DIFFERENTIATION OF STARS OBSERVED WITH HEBE.

Date; 1847. Observer	OBJECT.	Chr. times of transit. I.	II.	III.	Mean.	Mic.	Planet—Star. Δ α.	Δ mic.
		s.	s.	s.	h. m. s.	w. revs.	m. s.	revs.
Aug. 29	(3)	6.0	12.8	25.0	17 57 12.80	2 43.506	— 4 57.17	+29.679
	Weisse XVII, 18 .	57.6	10.0	22.3	18 2 9.97	3 43.190		
M.	(5)			49.0	2 36.58	3 41.095	+ 0 26.61	2.095
	(3)	30.0	42.2	54.3	10 42.17	2 43.252	— 4 58.83	29.615
	Weisse XVII, 18 .	28.5	41.0		15 41.06	3 42.872		
	(5)		6.5	19.0	16 6.56	3 40.872	+ 0 25.50	2.000
	Weisse XVI, 1139 .	5.8	18.0	30.8	24 18.20	3 45.120	2 50.30	66.391
	Weisse XVII, 18 .		42.8	55.0	26 42.86	1 41.025		
	(5)			21.0	27 8.58	1 38.865	0 25.72	2.160
	Weisse XVII, 18 .	20.5	32.5	45.0	52 32.67	1 40.440		
	(5)			12.0	53 59.58	1 38.390	0 26.91	2.050
	Weisse XVI, 1139	39.4	51.8	4.6	57 51.93	3 44.340		
	(6)	52.0	4.0	17.0	19 0 4.33	1 45.935	2 12.40	58.441
	Weisse XVI, 1139	37.2	49.9	2.4	7 49.83	3 44.570		
	(6)	50.0	2.5	15.0	10 2.50	1 46.145	+ 2 12.67	58.561
	(4)	14.8	27.0	39.6	12 27.13	3 44.320		
	(7)		40.6	52.8	14 40.66	2 31.980	— 2 13.53	42.335
	Weisse XVI, 1139	58.8	11.0	23.5	17 11.10	3 44.170		
	(6)	11.0	23.5	36.1	19 23.53	1 45.686	+ 2 12.40	58.620
	Weisse XVII, 18 .	28.0	40.0		26 40.06	1 39.660		
	(5)		5.0	17.0	27 5.06	1 37.590	0 25.00	+ 2.070
	Weisse XVI, 1139 .	26.0	38.6	51.2	32 38.60	3 43.360	2 24.86	—64.211
	Weisse XVII, 18 .		3 4	15.6	35 3.46	1 39.285		
	Weisse XVI, 1139 .	33 8	46 0	58.8	38 46.20	3 42.955		
	(6)	46 0	59 0	11.5	40 58.83	1 44.430	+ 2 12.63	+58.651
	(4)	48 8	1 0	13.8	46 1.20	3 42.505	— 2 12.53	42.386
	(7)	1 4	14 0	25.8	48 13.73	2 30.110		
	Weisse XVI, 1139 .	18 0	30 5	43.2	20 1 30.57	3 40.960	+ 2 50.51	66.191
	(5)			33.5	4 21.08	1 34.805		
	Weisse XVI, 1139.	46.0	58.5	11.0	9 58.50	3 40.535	2 49.97	66.171
	(5)	36.0	48.4	1.0	12 48.47	1 34.500		
	Weisse XVII, 18 .	24.0	37.0		17 37.06	1 36.255		
	(5)		3.5	15.8	18 3.56	1 30.182	0 26.50	2.073
	Weisse XVI, 1139 .	45.8	58.6	11.8	20 58.73	3 39.885	+ 2 49.84	+66.206
	(5)	36.0	48.7	1.0	23 48.57	1 33.815		

Results.

m. s.
Corr. of Chron. —3 13.21

	App't. α h. m. s.	App't. δ ° ′ ″
Weisse XVII, 18 . .	17 2 21.32	—11 33 1.52
Weisse XVI, 1139 . .	16 59 56.72	49 31.98

	Δ α m. s.	Δ δ ′ ″	No. Comp.
(3)—Weisse XVII, 18	—4 58.00	+ 7 35.41	2
Δ ρ	.00	.32	
(5)—Weisse XVII, 18	+0 26.04	+ 0 31.86	6
Δ ρ	.00	.03	
(5)—Weisse XVI, 1139	+2 50.18	+16 57.47	4
Δ ρ	+ .03	.99	
(6)	+2 12.51	+14 59.62	4
Δ ρ	+ .02	.80	
(7)—(4)	—2 13.03	—10 50.70	2
Δ ρ	— .02	.60	

MEAN RIGHT ASCENSIONS FOR 1850.0

OF STARS OBSERVED

WITH THE

WEST TRANSIT INSTRUMENT.

1847.

NATIONAL OBSERVATORY.

α Andromedæ.

		h.	m.	s.
January	6	0	0	38.56
September	14			38.46
	15			38.32
October	21			38.74
	25			38.57
	29			38.55
November	3			38.47
	5			38.61
	11			38.52
	17			38.64
	22			38.39
	30			38.58
December	7			38.54

γ Pegasi.

January	6	0	5	30.99
September	14			30.76
	15			30.96
October	20			30.91
	25			30.89
	29			30.96
November	3			30.87
	5			31.06
	11			31.05
	17			30.93
	22			30.78
	30			30.85
December	7			30.93

Piscium, 89.

September	20	0	17	58.06

Ceti, 112.

September	20	0	22	23.01

Weisse, 0.479.

January	11	0	27	50.83

Weisse, 0.515.

January	6	0	30	24.57

ε Andromedæ, 164.

December	4	0	30	37.97

α Cassiopeiæ.

January	11	0	32	1.43
October	25			2.00
	29			1.70
November	3			1.61
	5			1.73
	15			1.48
	17			1.27
	22			1.25
	30			1.64
December	7			1.23
	15			1.27
	18			1.50
	21			1.31

β Ceti.

January	6	0	36	3.28
	11			3.37
September	14			3.51
October	20			3.33
	26			3.28
November	3			3.38
	5			3.12
	11			3.35
	22			3.64
December	4			3.36

Weisse, 0.712.

		h.	m.	s.
January	6	0	40	39.71

Piscium, 229.

December	4	0	41	50.07

μ Andromedæ, 259.

December	4	0	48	26.25

Piscium, 311.

December	24	0	58	3.71

Piscium, 312.

December	24	0	53	5.93

Weisse I. 40.

January	6	1	3	36.35
	11			36.21
	14			36.33

Weisse I. 72.

January	14	1	5	42.38

Polaris.

January	6	1	4	60.74
	11			60.82
	14			60.87
March	31 S. P.			60.92
April	2 S. P.			60.44
	4 S. P.			63.48
	7			56.88
	7 S. P.			56.05
	7			56.27
	9 S. P.			60.83
	11			59.31
	13			55.49
	14 S. P.			61.22
	15			60.93
	20 S. P.			54.99
	21 S. P.			60.91
	21			57.27
	22 S. P.			60.80
	24 S. P.			60.71
	25 S. P.			60.76
	26 S. P.			60.98
May	3 S. P.			60.25
	5 S. P.			60.81
	13 S. P.			61.21
	16			60.90
	17 S. P.			60.95
	24 S. P.			61.03
	29 S. P.			60.97
June	2 S. P.			60.75
	4 S. P.			60.35
	7 S. P.			60.71
	8 S. P.			60.98
	9 S. P.			60.57
	15 S. P.			60.93
September	6			60.96
	15 S. P.			64.67
	15			66.44
October	11 S. P.			60.73
	17 S. P.			60.42
	20 S. P.			57.74
	25			60.99
	28 S. P.			60.94
	29			60.65
November	1 S. P.			61.19
	2 S. P.			61.40
	3			60.84
	4 S. P.			60.81

Polaris, (Continued.)

		h.	m.	s.
November	5	1	4	64.88
	5 S. P.			64.61
	17			60.95
	22			60.60
December	15			60.98
	18			60.75
	21			60.19
	29			60.87

ζ Piscium, 368.

December	24	1	5	53.71

Piscium, 369.

December	24	1	5	55.19

Weisse I. 88.

January	11	1	6	26.24

Weisse I. 91.

January	11	1	6	35.98

Weisse I. 225.

January	6	1	14	10.12
	11			10.09
	14			10.07

Weisse I. 227.

January	11	1	14	32.86
	14			32.52

ϑ¹ Ceti.

January	11	1	16	31.56
	14			31.58
September	14			31.52
October	26			31.59
	29			31.41
November	11			31.51
	17			31.66
December	7			31.49
	15			31.83
	18			31.51
	24			31.58
	29			31.59

Weisse I. 564.

January	11	1	32	1.01
	14			0.93

Weisse I. 594.

January	6	1	33	9.43
	11			9.57
	14			9.67

Weisse I. 715.

January	6	1	39	27.43
	11			27.62
	14			27.36

Weisse I. 725.

January	6	1	39	56.66
	11			56.44
	14			56.22

Weisse I. 727.

		h.	m.	s.
January	6	1	40	3.02
	11			3.03
	14			2.89

Weisse I. 813.

January	6	1	45	11.05
	11			11.24
	14			10.93

Arietis, 609.

November	11	1	51	24.43

Weisse I. 942.

January	6	1	52	40.41
	11			40.56
	14			40.49

Weisse I. 1048.

January	6	1	58	42.71

α Arietis.

January	14	1	58	43.53
September	14			43.74
October	25			43.71
	29			43.50
November	11			43.61
	20			43.75
	26			43.59
December	7			43.57
	14			43.51
	21			43.66
	29			43.57

Weisse I. 1069.

January	6	1	59	29.70

Weisse II. 120.

January	6	2	8	23.04
	14			23.31

Weisse II. 159.

January	6	2	10	42.66
	14			42.68

Weisse II. 155.

November	11	2	10	44.24

Dec. —4°50′.

January	6	2	11	46.22

Weisse II. 288.

January	14	2	17	26.30

Weisse II. 442.

January	14	2	26	39.10

γ Ceti.

		h.	m.	s.
vember	2 . .	2	35	31.84
	17 . .			32.05
	26 . .			31.98
cember	18 . .			31.81
	21 . .			32.03
	24 . .			31.86
	29 . .			31.94

α Ceti.

ie	1 . .	2	54	26.71
ober	25 . .			26.53
vember	2 . .			26.51
	5 . .			(26.80)
	11 . .			26.55
	17 . .			26.69
	26 . .			26.42
ember	18 . .			26.69
	21 . .			26.57
	24 . .			26.53
	29 . .			26.56

α Persei.

s	1 . .	3	13	38.13
ember	17 . .			38.09
	20 . .			37.94
	26 . .			38.40
ember	21 . .			38.30

ξ Tauri, 1068.

ber	25 . .	3	19	2.66

ε Eridani, 1100.

mber	8 . .	3	25	51.80

η Tauri.

ber	25 . .	3	38	34.44
ember	17 . .			34.47
	26 . .			34.61
ember	8 . .			34.54
	21 . .			34.40
	28 . .			34.57
	29 . .			34.57

γ¹ Eridani.

ember	17 . .	3	51	2.02
	26 . .			1.99
ember	7 . .			2.01
	8 . .			1.80
	21 . .			2.11
	28 . .			2.05
	29 . .			1.94

λ Tauri, 1241.

ber	25 . .	3	52	22.37

o² Eridani, 1309.

mber	8 . .	4	9	22.04

α Tauri.

ber	15 . .	4	27	19.83
	25 . .			19.12
	17 . .			19.12
	26 . .			19.14
	15 . .			19.05
	18 . .			19.18
	21 . .			18.90
	24 . .			19.21
	28 . .			19.00
	29 . .			18.99

Weisse IV, 733.

		h.	m.	s.
December	15 . .	4	33	36.25
	18 . .			36.14

Weisse IV, 722.

December	7 . .	4	33	56.64

Weisse IV, 794.

December	6 . .	4	36	14.93
	15			15.05
	18			14.95

Weisse IV, 824.

December	6 . .	4	38	4.00
	15 . .			4.26
	18 . .			4.34

Weisse IV, 957.

November	29 . .	4	44	3.10

α Aurigæ.

October	18 . .	5	5	36.93

β Orionis.

November	17 . .	5	7	19.61
December	6 . .			19.86
	8 . .			19.73
	15 . .			20.00
	21 . .			19.84
	28 . .			19.95

β Tauri.

July	12 . .	5	16	48.61
November	17 . .			48.82
	26 . .			48.64
December	6 . .			48.83
	8 . .			48.65
	15 . .			48.79
	21 . .			48.75
	28 . .			48.52

δ Orionis.

November	17 . .	5	24	(20.43)
	26 . .			20.58
December	6 . .			20.79
	8 . .			20.71
	15 . .			20.78
	28 . .			20.60

ε Orionis.

November	17 . .	5	28	36.08
	26 . .			36.17
December	6 . .			36.31
	8 . .			36.37
	15 . .			36.43
	28 . .			36.18

α Orionis.

July	12 . .	5	47	2.93
	15 . .			2.98
November	26 . .			3.08
December	6 . .			3.07
	8 . .			3.14
	14 . .			3.16
	15 . .			3.19
	28 . .			3.06

μ Geminorum.

		h.	m.	s.
December	6 . .	6	13	53.06
	14 . .			53.15
	28 . .			52.98

α Canis Majoris.

March	31 . .	6	38	32.57
April	7 . .			32.47
	9 . .			32.40
	12 . .			32.41
	16 . .			32.45
July	15 . .			32.47
	27 . .			32.34
December	6 . .			(32.15)
	15 . .			32.50
	28 . .			32.32

ε Canis Majoris.

March	31 . .	6	52	43.67
April	3 . .			43.75
	7 . .			43.84
December	15 . .			43.89
	28 . .			43.63

δ Geminorum.

March	31 . .	7	11	9.59
April	3 . .			9.67
	7 . .			9.50
	9 . .			9.75
	16 . .			9.56
December	15 . .			(9.33)

α² Geminorum.

April	9 . .	7	25	1.11
	12 . .			1.22
	31 . .			1.21
	16 . .			1.19
December	28 . .			(1.62)

α Canis Minoris.

April	8 . .	7	31	26.72
	4 . .			26.85
	7 . .			26.75
	9 . .			26.75
	13 . .			26.88
	16 . .			26.83
December	28 . .			(27.09)

β Geminorum.

March	31 . .	7	36	7.84
April	3 . .			7.89
	7 . .			7.85
	13 . .			7.72
	16 . .			7.75
December	15 . .			7.73
	28 . .			7.79

15 Argus.

March	31 . .	8	1	9.26
April	9 . .			9.42
	16 . .			9.41
December	28 . .			9.40

ε Hydræ.

March	25 . .	8	38	49.76
	31 . .			49.81
April	3 . .			49.66
	9 . .			49.74
	14 . .			49.77
	16 . .			49.65
	25 . .			49.69

ι Ursæ Majoris.

		h.	m.	s.
March	25 . .	8	48	54.84
April	10 . .			54.51
	20 . .			54.67

Hydræ, 3184.

April	4 . .	9	12	33.18

α Hydræ.

March	25 . .	9	20	12.82
	31 . .			12.82
April	4 . .			12.86
	7 . .			12.88
	10 . .			12.99
	11 . .			12.94
	14 . .			12.90
	20 . .			12.94
	21 . .			13.03
	25 . .			13.01
	26 . .			12.97

ε Leonis.

March	25 . .	9	37	19.74
	31 . .			19.77
April	4 . .			19.76
	6 . .			19.67
	10 . .			19.59
	11 . .			19.71
	14 . .			19.61
	20 . .			19.53
	22 . .			19.63
	26 . .			19.72
May	5 . .			19.77
	6 . .			19.64

α Leonis.

April	4 . .	10	0	22.74
	10 . .			22.56
	11 . .			22.64
	14 . .			22.84
	20 . .			22.65
	22 . .			22.69
	25 . .			22.54
	26 . .			22.73
May	1 . .			22.53
	6 . .			22.74

Sextantis, 3550.

April	14 . .	10	15	47.64

Sextantis, 3563.

April	4 . .	10	18	16.33

Sextantis, 3603.

April	14 . .	10	23	28.51

ρ Leonis, 3609.

April	7 . .	10	24	53.38

Leonis, 3649.

April	14 . .	10	31	50.77

Sextantis, 3684.

April	7 . .	10	37	25.59

α Ursæ Majoris.

		h. m. s.
March	31 . .	10 54 26.07
April	2 . .	25.47
	7 . .	25.[illegible]
	10 . .	25.56
	14 . .	25.62
May	1 . .	25.94
	5 . .	25.19
	6 . .	25.42
	11 . .	25.[illegible]
	24 . .	25.79

δ Leonis.

March	31 . .	11 6	7.2[illegible]
April	2 . .		7.41
	4 . .		7.23
	6 . .		7.47
	10 . .		7.51
	13 . .		7.51
	20 . .		7.37
	22 . .		7.24
	27 . .		7.34
May	5 . .		7.39
	6 . .		7.41
	24 . .		7.46

δ Hydræ at Cratekis.

April	2 . .	11 11	50.56
	6 . .		50.55
	10 . .		50.65
	13 . .		50.62
	22 . .		50.71
	26 . .		50.36
May	1 . .		50.67
	5 . .		50.45
	6 . .		50.72
	24 . .		50.[illegible]0
	28 . .		50.6[illegible]

Leonis, 3901.

April	4 . .	11 20	13.95

Leonis, 3955.

April	2 . .	11 31	44.98
	4 . .		43.81

β Leonis.

March	31 . .	11 41	24.32
April	4 . .		24.30
	20 . .		24.38
	22 . .		24.24
	25 . .		24.30
	27 . .		24.24
May	1 . .		24.20
	5 . .		24.13
	6 . .		24.22
	24 . .		24.15
	28 . .		24.29

γ Ursæ Majoris.

April	2 . .	11 45	54.79
	13 . .		54.90
	20 . .		54.91
	22 . .		55.07
	25 . .		55.19
May	1 . .		55.06
	11 . .		54.7[illegible]
	2[illegible] . .		54.96

Virginis, 4[illegible]

April	2 . .	11 59	33.97

γ Corvi, 4154

April	2 . .	12 [illegible]	[illegible]

Corvi, 4173.

April	[illegible] . .	12 15	31.[illegible]

β Corvi

March	31 . .	12 26	3.[illegible]
April	2 . .		3.[illegible]
	6 . .		3.[illegible]
	[illegible] . .		3.[illegible]
	[illegible] . .		3.[illegible]
	[illegible] . .		3.[illegible]
May	5 . .		3.[illegible]
	11 . .		3.[illegible]
	17 . .		3.[illegible]
	19 . .		3.[illegible]
	24 . .		3.[illegible]
	[illegible] . .		3.[illegible]
	[illegible] . .		3.[illegible]
	[illegible] . .		3.[illegible]
June	1 . .		3.[illegible]

12 Canum Venaticorum.

April	9 . .	12 49	0.1[illegible]

α Virginis.

April	9 . .	13 17	17.[illegible]
	21 . .		17.[illegible]
	22 . .		17.[illegible]
May	3 . .		17.[illegible]
	5 . .		17.[illegible]
	13 . .		17.[illegible]
	15 . .		17.[illegible]
	16 . .		17.[illegible]
	24 . .		17.[illegible]
	29 . .		17.[illegible]
June	2 . .		17.[illegible]
	4 . .		17.[illegible]
	7 . .		17.[illegible]
	9 . .		17.[illegible]
	14 . .		17.[illegible]
	15 . .		17.[illegible]
	18 . .		17.[illegible]
November	1 . .		17.[illegible]

Canum Venat. 4536.

June	14 . .	13 2[illegible]	[illegible]
	15 . .		[illegible]
	18 . .		[illegible]

Canum Venat. 4552.

June	14 . .	13 30	47.[illegible]
	15 . .		47.[illegible]

Canum Venat. 4595.

June	14 . .	13 39	49.07
	15 . .		49.03

ζ Ursæ Majoris.

March	31 . .	13 41	37.50
April	2 . .		37.47
	14 . .		37.53
	20 . .		37.48
	21 . .		37.69
	22 . .		37.42

ζ Ursæ Majoris. Continued

		h. m. s.	
[illegible]	[illegible] . .	13 41	37.31
	[illegible] . .		37.35
	[illegible] . .		37.60
	[illegible] . .		37.42
May	[illegible] . .		37.56
	[illegible] . .		37.54
	[illegible] . .		37.[illegible]
	[illegible] . .		37.[illegible]
	[illegible] . .		37.[illegible]
	[illegible] . .		37.[illegible]
	[illegible] . .		37.55
	[illegible] . .		37.63
	[illegible] . .		37.[illegible]
	[illegible] . .		37.[illegible]
	[illegible] . .		37.[illegible]
June	[illegible] . .		37.[illegible]
	[illegible] . .		37.52
	[illegible] . .		37.44
	[illegible] . .		37.[illegible]
	[illegible] . .		37.52
	[illegible] . .		37.56

α Bootis.

April	21 . .	13 47	32.41
	[illegible] . .		32.45
	[illegible] . .		32.69
	[illegible] . .		32.38
	[illegible] . .		32.56
May	[illegible] . .		32.59
	[illegible] . .		32.37
	13 . .		32.50
	15 . .		32.35
	16 . .		32.40
	17 . .		32.27
	19 . .		32.51
	[illegible] . .		32.46
	21 . .		32.22
	24 . .		32.39
	[illegible] . .		32.36
June	[illegible] . .		32.42
	4 . .		32.51
	[illegible] . .		32.68
	[illegible] . .		32.51
	[illegible] . .		32.38
	11 . .		32.45
	13 . .		32.49
	14 . .		32.57
	15 . .		32.36
	21 . .		32.44
	[illegible] . .		32.41
Nov.	[illegible] . .		32.54
	4 . .		32.50

α Virginis. 4716.

June	23 . .	14 4	53.93

ε Bootis.

March	31 . .	14 8	49.19
April	2 . .		49.23
	14 . .		49.08
	21 . .		49.13
	22 . .		49.30
	24 . .		49.33
	25 . .		49.09
	26 . .		49.02
May	1 . .		49.19
	3 . .		49.15
	5 . .		49.27
	10 . .		49.09
	15 . .		49.01
	16 . .		49.21
	17 . .		49.05
June	2 . .		49.28
	4 . .		49.17
	7 . .		49.24

α Bootis, (Continued.)

		h. m. s.
June	8 . .	14 8 49.28
	9 . .	49.42
	11 . .	49.37
	12 . .	49.19
	13 . .	49.31
	15 . .	49.00
	17 . .	49.30
	21 . .	49.09
	24 . .	49.24
	25 . .	49.33
	26 . .	49.20
Oct.	11 . .	49.06
	18 . .	49.41
	28 . .	49.27
Nov.	1 . .	(48.89)
	2 . .	49.16

Bootis, 4763.

June	11 . .	14 19	21.68
	13 . .		21.51
	17 . .		21.75
	21 . .		21.70
	24 . .		21.80
	25 . .		(21.39)
	26 . .		21.76
July	1 . .		(22.04)

Bootis, 4797.

June	11 . .	14 22	3.67
	13 . .		3.68
	17 . .		3.69
	21 . .		3.72
	24 . .		3.72
	26 . .		3.69

γ Bootis, 4812.

June	17 . .	14 26	2.05
	21 . .		1.90
	24 . .		2.19
	25 . .		1.96
	26 . .		2.09
July	1 . .		2.21

Bootis, 4816.

June	11 . .	14 27	12.28
	13 . .		12.52

Bootis, 4825.

June	11 . .	14 28	30.54
	17 . .		30.41
	21 . .		30.41
	24 . .		30.59
	25 . .		30.54
	26 . .		30.46

ε Bootis.

April	2 . .	14 38	26.10
	14 . .		26.17
May	3 . .		26.17
	10 . .		(26.30)
	15 . .		26.27
	17 . .		26.24
	19 . .		26.15
	20 . .		26.24
	24 . .		26.13
June	4 . .		26.06
	7 . .		26.05
	8 . .		26.20
	9 . .		26.11
	11 . .		26.11
	12 . .		26.09
	13 . .		26.05

Bootis, (Continued.)

		h. m.	s.
15	. .	14 38	(25.90)
21	. .		26.11
23	. .		26.09
24	. .		26.16
25	. .		26.05
26	. .		26.09
1	. .		26.07
5	. .		26.14
17	. .		26.03

a^2 Libræ.

16	. .	14 42	35.14
19	. .		35.27
4	. .		35.13
7	. .		35.14
8	. .		35.07
9	. .		35.21
11	. .		35.19
13	. .		35.23
15	. .		35.26
24	. .		35.20
25	. .		35.34
26	. .		35.20
1	. .		35.22
5	. .		35.14
17	. .		35.45

β Ursæ Minoris.

2	. .	14 51	11.68
14	. .		11.89
3	. .		11.63
16	. .		12.30
19	. .		12.11
4	. .		11.67
7	. .		11.99
9	. .		11.86
15	. .		11.73
23	. .		11.60
1	. .		11.81

δ Libræ, 4939.

24	. .	14 52	57.66

Rumker, 4950.

6	. .	15 0	42.45

β^1 Libræ.

2	. .	15 8	56.34
26	. .		56.27
7	. .		56.34
16	. .		56.55
17	. .		56.43
4	. .		56.35
7	. .		56.16
9	. .		56.41
13	. .		56.29
14	. .		56.45
15	. .		56.44
23	. .		56.31
25	. .		56.27
26	. .		56.46
1	. .		56.36
3	. .		56.38
6	. .		56.41
17	. .		56.35

Rumker, 5048.

6	. .	15 15	19.48

Rumker, 5070.

6	. .	15 18	41.43

Rumker, 5110.

		h. m.	s.
July	6 . .	15 22	56.78

α Coronæ Borealis.

April	2 . .	15 28	20.17
May	7 . .		20.04
	16 . .		(20.50)
	19 . .		20.21
June	4 . .		20.23
	7 . .		20.37
	9 . .		20.10
	13 . .		(19.94)
	14 . .		20.12
	15 . .		20.25
	23 . .		20.14
	25 . .		20.07
	26 . .		20.08
	30 . .		20.38
July	1 . .		20.33
	3 . .		20.25
	6 . .		20.20

α Serpentis.

May	4 . .	15 36	52.95
	7 . .		52.87
	16 . .		53.07
June	7 . .		52.70
	8 . .		52.79
	12 . .		53.07
	15 . .		52.85
	23 . .		53.04
	25 . .		52.97
	30 . .		52.77
July	1 . .		52.83
	3 . .		52.84
	6 . .		52.86
	15 . .		53.08

β Serpentis, 5216.

July	19 . .	15 39	15.81

δ Coronæ Borealis, 5244.

July	19 . .	15 43	18.27

ϑ Libræ, 5257.

June	25 . .	15 45	17.38

ζ Ursæ Minoris.

April	2 . .	15 49	31.07
May	16 . .		32.05
	19 . .		33.22
June	7 . .		31.42
	9 . .		31.36
	15 . .		31.68
	23 . .		32.29
July	1 . .		32.04
	6 . .		31.80
	7 . .		31.85
	15 . .		31.39
	17 . .		31.06

λ Coronæ Borealis, 5295

July	19 . .	15	50 20.23

δ Scorpii, 5303.

June	25 . .	15	51 28.19

Coronæ Borealis, 5310.

		h. m.	s.
July	19 . .	15 53	25.37

β^1 Scorpii.

May	4 . .	15 56	43.32
	7 . .		43.28
	16 . .		43.16
June	7 . .		43.26
	8 . .		43.31
	9 . .		43.33
	12 . .		43.16
	23 . .		43.40
	30 . .		43.12
July	1 . .		43.33
	19 . .		43.29

Serpentis, 5359.

July	19 . .	16 0	27.93

τ Coronæ Borealis, 5385

July	19 . .	16 3	29.24

δ Ophiuchi.

April	2 . .	16 6	29.36
May	4 . .		29.15
	7 . .		29.16
	16 . .		29.12
	19 . .		29.35
June	7 . .		29.47
	8 . .		29.30
	9 . .		29.32
	12 . .		29.21
	15 . .		29.45
	23 . .		29.27
	30 . .		29.32
July	1 . .		29.45
	7 . .		29.38
	17 . .		29.27
	19 . .		29.24
	28 . .		29.04

Herculis, 5460.

July	7 . .	16 14	46.99

α Scorpii.

April	2 . .	16 20	13.19
May	5 . .		12.95
	7 . .		13.03
	16 . .		12.93
	18 . .		12.91
	19 . .		12.93
June	7 . .		(12.73)
	23 . .		12.92
July	3 . .		13.07
	6 . .		13.00
	7 . .		13.07
	10 . .		13.21
	15 . .		13.01
	17 . .		13.14
	23 . .		13.09
	27 . .		13.02
	28 . .		12.94
August	5 . .		13.03

η Draconis.

June	9 . .	16 21	58.29
	15 . .		.16

Herculis, 5546.

July	28 . .	16 28	27.36

σ Herculis, 5552.

		h. m.	s.
July	17 . .	16 29	15.98

Ophiuchi, 5567.

May	18 . .	16 31	44.02

ζ Herculis, 5604.

July	3 . .	16 35	37.84
	8 . .		37.69

η Herculis, 5617.

July	28 . .	16 37	45.39

Ophiuchi, 5627.

July	3 . .	16 39	36.11

Weisse XVI, 780.

May	18 . .	16 40	37.02

Dec.—5° 51′.

Aug.	2 . .	16 43	22.40

Herculis, 5652.

July	10 . .	16 43	25.17
	15 . .		25.26

Herculis, 5666.

July	24 . .	16 44	47.60

Ophiuchi, 5688,

Aug.	2 . .	16 46	34.77

Herculis, 5693.

July	28 . .	16 47	16.83

Ophiuchi, 5700.

May	18 . .	16 48	15.39

κ Ophiuchi, 5708.

July	8 . .	16 50	33.90
	31 . .		34.07

Weisse XVI, 1033.

August	11 . .	16 54	31.17

ϵ Herculis, 5731.

July	27 . .	16 54	33.02
	28 . .		33.00

Herculis, 5747.

July	24 . .	16 56	3.95

ϵ Ursæ Minoris.

June	25 . .	17 0	31.00
July	8 . .		30.96
	10 . .		31.03
	28 . .		31.06

[illegible] Ophiuchi, 5[illegible]

		h.	m.	s.
July	9	17	1	46.61
	10			46.72
	11			46.67

Herculis, (5788.)

July	21	17	2	43.11

Weisse XVII, 83,

August	11	17	5	24.73

α Herculis.

May	7	17	7	48.48
	18			48.60
July	1			48.36
	7			48.44
	8			48.45
	10			48.56
	23			48.53
	24			48.34
	27			48.49
	28			48.59
	31			48.43
August	3			48.65

Herculis, 5842.

July	7	17	11	47.32

ϑ Ophiuchi, 5851.

July	24	17	12	47.69

Herculis, 5863.

July	10	17	15	2.93

ρ Herculis, 5886.

July	7	17	18	30.63

λ Herculis, 5922.

August	2	17	24	40.82

α Ophiuchi.

May	18	17	27	58.31
July	1			58.16
	5			58.39
	8			58.32
	10			58.37
	17			58.35
	21			58.28
	24			58.56
	28			58.34
	31			58.30
August	2			58.19
	3			58.47
	8			58.09
	11			58.10

o Serpentis, 5976.

August	2	17	32	59.05

ι Herculis, 5990.

July	21	17	35	13.93

d Ophiuchi, 5996.

		h.	m.	s.
July	8	17	36	3.79
	31			3.91
August	8			3.78

γ Ophiuchi, 6020.

July	21	17	40	22.28
Aug.	3			22.29
	8			22.23
	11			22.13

μ Herculis, 6021.

July	10	17	40	35.14

Herculis, 6068.

August	3	17	48	25.14
	8			24.94

r Ophiuchi, 6087.

July	27	17	50	46.44

γ Draconis.

July	1	17	53	7.84
	3			7.96
	8			7.44
	10			7.26
	31			7.69
August	3			7.34
	11			7.10
Sept.	13			7.29

μ Sagittarii.

July	10	18	4	(47.26)
	15			47.51
	31			47.60
August	11			(47.23)
	26			47.58
	31			47.50
September	3			47.42
	6			47.59
	13			47.53
	15			47.53

η Serpentis, 6229.

August	5	18	13	32.72

κ Lyræ, 6235.

August	11	18	14	36.03

δ Ursæ Minoris.

July	14	18	20	43.62
August	26			43.72
	31			43.64
September	3			43.55
	6			43.71
	13			43.65
	15			41.81

α Lyræ.

July	3	18	31	51.40
	8			51.55
	10			51.58
	14			51.50
	15			51.37
	28			51.55

α Lyræ, (Continued.)

		h.	m.	s.
July	31	18	31	51.42
August	3			51.40
	11			(51.02)
	21			51.53
	25			51.34
September	4			51.56
	13			51.57
	15			51.58
	16			51.46
	27			51.47

β Lyræ.

July	3	18	44	32.57
	10			32.51
	15			32.55
	17			32.36
	23			32.38
	24			(32.72)
	28			32.53
August	3			32.52
	8			32.41
	11			32.43
	25			32.56
	26			32.47
	31			32.48
September	1			32.64
	2			32.62
	3			32.45
	4			32.53
	6			32.46
	10			32.51
	13			32.65
	15			32.50
	16			32.50
	27			32.32

ε Aquilæ, 6487.

August	2	18	52	48.79

ζ Aquilæ.

June	11	18	58	30.98
July	3			30.94
	10			30.83
	15			30.76
	16			30.88
	23			30.98
	24			31.04
August	2			30.99
	8			30.95
	11			30.76
	14			30.97
	18			31.02
	19			30.96
	21			30.86
	25			30.94
	26			30.87
September	1			30.89
	2			30.88
	3			30.91
	4			30.94
	6			30.92
	13			30.88
	15			30.84
	16			30.91
	27			30.89

δ Aquilæ.

July	3	19	17	55.99
	10			56.10
	15			56.09
	16			56.02
	17			56.02
	23			56.00
	28			55.93
August	8			55.95
	10			56.01

δ Aquilæ, (Continued.)

		h.	m.	s.
August	11	19	17	55.86
	13			56.04
	14			55.88
	18			56.00
	19			56.16
	21			56.12
	25			55.97
	26			56.02
September	1			56.11
	2			55.98
	3			56.10
	4			55.97
	6			56.07
	10			56.05
	13			55.99
	15			56.12
	16			56.13
	22			56.06
	27			55.99
October	3			56.16

μ Aquilæ, 6701.

July	21	19	26	45.63
September	1			45.54
	3			45.62

κ Aquilæ, 6713.

July	3	19	28	49.06

σ Aquilæ, 6729.

July	21	19	31	47.35
August	18			47.25
	19			47.42

κ Aquilæ, 6749.

July	21	19	35	30.52

γ Aquilæ.

July	3	19	39	7.57
	10			7.52
	15			7.69
	16			7.63
	17			7.47
	21			7.66
	23			7.51
	24			7.55
	28			7.53
	31			7.72
August	2			7.72
	3			7.54
	8			7.65
	10			7.61
	11			(7.33)
	13			7.75
	14			7.52
	18			7.63
	19			7.75
	21			7.62
	25			(7.37)
	26			7.60
September	1			7.66
	3			7.69
	6			7.56
	10			7.63
	13			7.58
	15			7.66
	22			7.67
	27			7.66
October	3			7.51
	11			7.61
	15			7.69
	18			7.64
November	5			7.66

α Aquilæ.

		h.	m.	s.
f	10	19	43	27.63
	15			27.89
	16			27.76
	17			27.76
	21			27.79
	23			27.75
	24			27.92
	31			27.87
;ust	2			27.69
	8			27.94
	10			27.76
	11			27.72
	13			27.80
	14			27.88
	18			27.76
	19			27.83
	21			27.63
	26			27.89
tember	1			27.80
	2			27.62
	3			27.82
	6			27.73
	10			27.79
	13			27.75
	15			27.61
	20			27.71
	27			27.93
ober	3			27.76
	11			27.91
	15			27.81
	16			27.78
	18			27.79
ember	5			27.91

Cygni, 6813.

e	11	19	45	15.10
r	3			15.32

β Aquilæ.

f	15	19	47	56.69
	16			56.61
	17			56.71
	24			56.68
	28			56.65
;ust	8			56.72
	10			56.65
	11			56.63
	13			56.80
	14			56.66
	18			56.64
	19			56.70
	21			56.64
	25			56.60
	26			56.57
tember	1			56.68
	3			56.63
	6			56.60
	10			56.55
	13			56.46
	15			56.79
	20			56.70
	22			56.56
ober	4			56.67
	9			56.62
	11			56.80
	15			56.61
	16			56.65
	18			56.72
	29			56.61
ember	5			56.63

Weisse XIX, 1259.

ober	3	19	49	59.89

Cygni, 6849.

e	11	19	50	30.12
r	3			30.20

η Cygni, 6850.

		h.	m.	s.
July	21	19	50	40.78

Cygni, 6857.

June	11	19	52	1.29

Weisse XIX, 1319.

October	3	19	52	41.44
	4			41.48
	9			41.43
	15			41.32
	18			41.35

Cygni, 6875.

June	11	19	54	25.03
July	3			25.05
	21			25.08

Dec.+36° 39′.

June	21	19	55	53.69

η Sagittæ, 6901.

July	21	19	58	30.31
	23			30.37

ϑ Aquilæ, 6934.

July	21	20	3	33.76

ρ Aquilæ, 6952.

July	21	20	7	20.09

a^2 Capricorni.

July	15	20	9	43.53
	17			43.62
	21			43.58
	24			(43.39)
	28			43.53
	29			43.64
August	3			43.53
	11			43.46
	13			43.64
	18			43.43
	19			43.51
	25			43.48
	26			43.59
September	1			43.72
	10			43.63
October	1			43.61
November	3			(43.78)
	5			42.70

Weisse XX, 268.

October	25	20	11	23.90

β Capricorni, 6995.

July	27	20	11	34.42

λ Ursæ Minoris.

March	25 . S.P.	20	12	61.93
April	3 . S.P.			61.83
	4 . S.P.			59.49
	7 . S.P.			59.14
	11 . S.P.			60.41

λ Ursæ Minoris, (Continued.)

		h.	m.	s.
April	13 . S.P.	20	12	56.69
July	15			62.47
	17			62.71
	23			61.97
August	11			61.68

Cygni, 7001.

July	21	20	13	29.95

Weisse XX, 387.

October	27	20	15	45.64
	28			45.07

γ Cygni, 7022.

July	24	20	16	50.71
	29			.72
August	3			.71
	19			.78

Weisse XX, 545.

November	3	20	21	56.52

Cygni, 7061.

July	24	20	22	0.83

ω^1 Cygni, 7062.

July	21	20	22	27.19

Cygni, 7067.

July	29	20	23	16.02
August	3			16.09

ε Delphini, 7088.

August	12	20	26	2.83
	19			2.52
September	1			2.76
October	1			2.68

Cygni, (7114.)

July	24	20	29	11.48

Weisse XX, 767.

November	5	20	30	4.65

Weisse XX, 779.

November	5	20	30	26.40

β Delphini, 7121.

August	13	20	30	30.73

α Delphini, 7149.

July	29	20	32	40.21

α Cygni.

July	28	20	36	19.14
	29			19.09

α Cygni, (Continued.)

		h.	m.	s.
August	3	20	36	19.26
	12			19.18
	13			18.97
	18			19.05
	25			(18.76
September	1			(19.31
	22			19.11
October	1			19.01
	4			18.99
	20			(19.30
	25			19.16
	26			19.13
	27			19.20
	29			18.93
November	3			18.97

Weisse XX, 1023.

September	21	20	40	0.14

μ Aquarii, 7239.

July	27	20	44	33.27
	29			33.44
August	12			33.33
	13			33.42
September	1			33.44
	21			33.47

Cygni, 7253.

July	24	20	47	56.53
August	3			56.44

Vulpeculæ, 7256.

July	29	20	48	10.08
August	18			10.12

Aquarii, 7261.

November	3	20	48	47.34

Vulpeculæ, 7275.

August	13	20	51	34.02

ν Cygni, 7277.

July	29	20	51	34.88

Aquarii, 7309.

August	12	20	56	8.20

61^1 Cygni.

July	15	21	0	10.45
	17			10.55
	24			10.61
August	3			10.42
	11			10.34
	12			10.46
	13			10.44
	19			10.44
	25			10.56
September	1			10.53
	10			10.48
	21			10.61
October	1			10.58
	4			10.51
	9			10.41
	20			10.47
	25			10.59
	26			10.56

[illegible]

[illegible]	[illegible]		33.10
			33.08
			33.23
			33.18
			33.30
			33.18
			33.09
			33.09
			33.16
			33.21
			33.36
			33.29
			33.22
			33.06
			33.15
			33.32
			33.09
			33.24
			(32.76)
			33.10
			33.21

[illegible], 7303.

[illegible]	[illegible]	21 10	17.40
	[illegible]		17.50
	[illegible]		16.90
	[illegible]		18.55
	[illegible]		17.89
	[illegible]		18.13

[illegible], 7309.

July	[illegible]	21 11	45.07

[illegible] Cephei.

July	17	21 14	59.54
	24		59.85
August	11		59.57
	[illegible]		59.59
	[illegible]		59.71
	[illegible]		59.59
	[illegible]		59.69
	[illegible]		59.68
	[illegible]		59.65
	[illegible]		59.56
	[illegible]		59.70

[illegible]

		h. m.	s.
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	21 15	9.00

[illegible] Aquarii.

[illegible]	[illegible]	21 23	39.34
	24		39.39
	[illegible]		39.43
August	3		39.62
	[illegible]		39.36
	12		39.47
	13		39.37
	18		39.54
	19		39.47
	25		39.43
September	1		39.65
	21		39.50
	29		39.51
October	1		39.44
	8		39.47
	25		39.52
	27		39.56
	28		39.44
	29		39.56
November	5		39.59
	11		39.51
	17		(39.67)

β Cephei.

September	21	21 26	42.33
	29		42.37
October	8		42.39

Pegasi, 7520.

July	29	21 30	44.41

γ Capricorni, 7525.

August	25	21 31	46.16

ε Pegasi.

July	17	21 36	49.13
	24		48.98
	29		49.07
August	3		49.13
	13		48.92
	18		49.15
	19		(48.79)
September	1		49.03
	4		49.08
	10		48.94
	27		49.18
	29		49.10
October	8		49.05
	11		48.81
	25		49.06
	26		49.06
	27		49.04
	28		49.13
	29		48.97
November	2		49.24
	4		49.12
	5		49.18
	17		49.11

μ Capricorni, 7618.

August	25	21 45	6.49
November	4		7.01

Pegasi, 7623.

		h. m.	s.
July	17	21 45	48.23

Pegasi, 7641.

November	4	21 49	37.65

Aquarii, 7670.

November	4	21 55	22.99

Aquarii, 7685.

September	4	21 57	4.32

α Aquarii.

July	17	21 58	4.55
	24		4.37
	29		4.59
August	3		4.56
	30		4.54
September	4		4.46
	27		4.66
October	8		4.66

ι Aquarii, 7691.

September	21	21 58	19.75

α Gruis.

September	16	21 58	45.30

Weisse XXI, 1398.

August	12	22 0	32.37
September	1		32.19

Dec.—13° 45′ (?)

October	11	22 0	46.32

Weisse XXII, 28.

October	11	22 2	13.45

Aquarii, 7722.

July	16	22 2	36.10
	24		35.89
	29		35.98
August	3		36.15
	5		35.97
	8		36.17
	11		35.96
	12		36.15
	13		36.03
	18		35.98
	19		35.73
	25		35.77
	26		35.98
	30		35.88
September	1		35.96
	3		36.17
	4		36.02
	10		35.95
October	8		36.11
	15		35.97
	18		36.23
	21		35.95

Dec.—12° 49′ (?)

October	11	22 4	11.47

Aquarii, 7740.

		h. m. s.
July	29	22 4 1[illegible]
August	5	1[illegible]
October	15	1[illegible]
	18	1[illegible]
	21	1[illegible]

Aquarii, 7747.

July	16	22 5 2[illegible]
September	4	2[illegible]

Weisse XXII, 105.

August	11	22 5 5[illegible]
	18	5[illegible]

Dec.—12° 5′.

July	16	22 8 4[illegible]

ϑ Aquarii, 7773.

August	26	22 8 5[illegible]
September	21	5[illegible]

Pegasi, 7788.

October	27	22 12 [illegible]

π Aquarii, 7814.

August	5	22 17 [illegible]
	8	[illegible]
	12	[illegible]
October	27	[illegible]

ζ Aquarii, 7832.

November	15	22 21 [illegible]

η Aquarii, 7868.

November	15	22 27 [illegible]

ζ Pegasi.

August	5	22 33 [illegible]
	8	[illegible]
	12	[illegible]
	13	[illegible]
	19	[illegible]
	26	[illegible]
	30	[illegible]
September	1	[illegible]
	4	[illegible]
	10	[illegible]
	14	[illegible]
October	9	[illegible]
	16	[illegible]
	20	[illegible]
	21	[illegible]
	27	[illegible]
	29	[illegible]
November	15	[illegible]
	16	[illegible]
	17	[illegible]
	20	[illegible]

λ Aquarii, 7970.

August	25	22 44 [illegible]
	26	[illegible]
November	16	[illegible]

α Piscis Australis.

		h.	m.	s.
tober	18 . .	22	49	21.20
	21 . .			20.89
	27 . .			20.94
	29 . .			21.12
vember	15 . .			20.98
	17 . .			21.18
	30 . .			20.88

α Pegasi.

		h.	m.	s.
gust	12 . .	22	57	17.58
	30 . .			17.50
tember	1 . .			17.31
	16 . .			17.36
tober	16 . .			17.35
	20 . .			17.43

α Pegasi, (Continued.)

		h.	m.	s.
October	21 . .	22	57	17.45
	27 . .			17.38
	29 . .			17.48
November	11 . .			17.38
	15 . .			17.40
	16 . .			17.47
	18 . .			17.47
	30 . .			17.53

ψ^1 Aquarii, 8095.

		h.	m.	s.
November	30 . .	23	8	1.57

γ Piscium, 8105.

		h.	m.	s.
November	17 . .	23	9	23.59

υ Pegasi, 8160.

		h.	m.	s.
November	30 . .	23	17	53.89

κ Piscium, 8169.

		h.	m.	s.
November	15 . .	23	19	14.45

ε Piscium.

		h.	m.	s.
September	14 . .	23	32	14.13
	22 . .			14.14
October	9 . .			14.29
	16 . .			14.24
	20 . .			14.12
	25 . .			14.05
	29 . .			14.27
November	3 . .			14.20
	11 . .			14.14
	15 . .			14.16
	29 . .			14.16

γ Cephei.

		h.	m.	s.
January	6 . .	23	33	13.8
October	21 . .			14.2

λ Piscium, 8243.

		h.	m.	s.
August	26 . .	23	34	23.71
November	17 . .			23.6

Piscium, 8303.

		h.	m.	s.
November	30 . .	23	45	23.69

ω Piscium, 8331.

		h.	m.	s.
November	17 . .	23	51	36.7
	30 . .			36.5

MEAN DECLINATIONS FOR 1850.0

OF STARS OBSERVED

WITH

THE MURAL CIRCLE.

1847.

NATIONAL OBSERVATORY.

α Andromedæ, R. 0h. 0m. 38s.

			°	′	″
Sept.	6	. .	+ 28	15	42.80
Oct.	21	. .			44.78
Nov.	3	. .			42.39
	5	. .			42.73
	11	. .			43.09
	17	. .			43.17
	29	. .			41.56

—0″.18 applied for errors of division.

γ Pegasi, R. 0h. 5m. 31s.

Sept.	28	. .	+ 14	20	57.83
Oct.	4	. .			(60.70)
	9	. .			57.99
	20	. .			58.78
Nov.	11	. .			58.93

α Cassiopeiæ, R. 0h. 32m. 1s.

Sept.	6	. .	+ 55	42	50.08
	28	. .			49.48
Oct.	9	. .			49.11
	20	. .			50.89
	21	. . (ref)			50.32
	"	. .			50.03
	27	. .			49.78
Nov.	3	. .			49.44
	5	. .			48.59
	11	. .			48.67
	14	. .			49.81
	17	. .			49.17
	29	. .			49.87

β Ceti, R. 0h. 36m. 3s.

Sept.	28	. .	— 18	48	37.73
Oct.	26	. .			39.35

Weisse I. 40, R. 1h. 3m. 36s.

Jan.	6	. .	—	2	47 8.22
	11	. .			6.99

Polaris, R. 1h. 5m. 1s.

		hh.				
Jan.	5,	1.2	. +	88	30	35.67
	14,	1.2	.			35.70
March	5,	1.2	.			35.40
	6,	1.2	.			36.32
April	11,	1.2	.			35.02
May	5,	1.2	.			34.24
	16,	1.2	.			35.20
Aug.	26,	1.2	.			33.58
Sept.	6,	1.4	.			34.28
Oct.	21,	1.4	.			35.11
	27,	1.4	.			33.51
Nov.	3,	1.0	.			33.98
	11,	1.4	.			33.99

+0″.04 applied for errors of division.

Polaris, (S. P.)

		hh.				
Feb.	5,	1.2	. +	88	30	35.67
March	5,	1.2	.			35.96
April	2,	1.2	.			36.56
	7,	1.2	.			35.31
	20,	1.2	.			35.18
May	20,	1.2	.			34.94
	25,	1.2	.			35.52
Oct.	15,	1.2	.			36.04
Nov.	5,	1.4	.			35.29

Weisse I. 72, R. 1h. 5m. 42s.

Jan.	6	. .	—	2	39 20.64
	11	. .			20.77

Weisse I. 225, R. 1h. 14m. 10s.

			°	′	″
Jan.	6	. .	—	2	47 3.71
	11	. .			3.25

ϑ¹ Ceti, R. 1h. 16m. 31s.

Jan.	12	. .	—	8	57 30.88
Oct.	9	. .			32.39
	26	. .			31.27
Dec.	29	. .			32.09

Weisse I. 564, R. 1h. 32m. 1s.

Jan.	6	. .	—	3	16 52.79
	11	. .			50.59

Weisse I. 594, R. 1h. 33m. 10s.

Jan.	6	. .	—	3	22 53.92
	11	. .			52.58

Weisse I. 715, R. 1h. 39m. 27s.

Jan.	6	. .	—	3	51 58.65
	11	. .			56.68

Weisse I. 727, R. 1h. 40m. 3s.

Jan.	14	. .	—	3	59 36.73

Weisse I. 813, R. 1h. 45m. 11s.

Jan.	11	. .	—	3	51 37.16

Arietis, 609, R. 1h. 51m. 24s.

Nov.	11	. .	+	11	33 54.24

Weisse I. 942, R. 1h. 52m. 40s.

Jan.	14	. .	—	4	5 50.02

α Arietis, R. 1h. 58m. 43s.

Jan.	5	. .	+	22	45 2.05
	12	. .			1.96
Oct.	4	. .			(4.63)
Nov.	2	. .			1.76
	5	. .			3.25
	11	. .			2.22
	14	. .			3.19
Dec.	24	. .			1.99

Weisse I. 1069, R. 1h. 59m. 30s.

Jan.	11	. .	—	4	56 2.19
	22	. .			1.93

Arietis, 683, R. 2h. 4m. 53.

Oct.	21	. .	+	14	34 26.22

Weisse II. 120, R. 2h. 8m. 23s.

Jan.	11	. .	—	4	47 35.25
	14	. .			35.40
	22	. .			34.22

Weisse II. 159, R. 2h. 10m. 43s.

Jan.	11	. .	—	4	47 38.54
	14	. .			39.32
	22	. .			38.27

Weisse II. 214, R. 2h. 14m. 5s.

			°	′	″
Oct.	21	. .	+	12	29 38.33

Weisse II. 288, R. 2h. 17m. 36s.

Jan.	14	. .	—	5	25 40.78

Weisse II. 379, R. 2h. 22m. 38s.

Nov.	11	. .	+	12	45 50.44

Weisse II. 443, R. 2h. 26m. 39s.

Jan.	11	. .	—	6	17 48.82
	14	. .			49.50
	22	. .			49.57

Weisse II. 475, R. 2h. 28m. 5s.

Jan.	11	. .	—	6	19 43.97
	22	. .			44.83

Arietis, 798, R. 2h. 28m. 27s.

Oct.	21	. .	+	11	47 40.14
Nov.	11	. .			40.90

Weisse II. 566, R. 2h. 32m. 39s.

Jan.	22	. .	—	6	19 37.84

γ Ceti, R. 2h. 35m. 32s.

Jan.	5	. .	+	2	36 4.36
	12	. .			4.68
Oct.	4	. .			4.73
Nov.	14	. .			4.99
	17	. .			2.55
Dec.	21	. .			2.92
	24	. .			3.02
	29	. .			2.74

Weisse II. 789, R. 2h. 45m. 42s.

Oct.	21	. .	+	13	36 11.43
Nov.	11	. .			12.14

α Ceti, R. 2h. 54m. 26s.

Jan.	12	. .	+	3	29 (55.58)
Nov.	17	. .			52.48
	29	. .			53.06
Dec.	21	. .			53.21
	24	. .			52.28
	29	. .			52.32

α Persei, R. 3h. 13m. 38s.

Jan.	12	. .	+	49	19 20.02
Feb.	6	. .			20.74
Nov.	5	. .			21.56
	29	. .			21.50
Dec.	8	. .			21.06
	21	. .			20.56
	24	. .			21.93
	29	. .			22.16

Weisse III. 456, R. 3h. 25m. 8s.

Jan.	14	. .	—	9	6 19.11
Feb.	6	. .			19.12

Anonymous, R. 3h. 28m. 49s.

Feb.	6	. .	—	9	7 48.97

Tauri, 1164, R. 3h. 38m. 26s.

			°	′	″
Jan.	5	. .	+	23	38 52.15

η Tauri, R. 3h. 38m. 34s.

Jan.	5	. .	+	23	38 13.79
	12	. .			14.36
Nov.	5	. .			12.53
	17	. .			12.43
	29	. .			12.98
Dec.	3	. .			13.59
	8	. .			12.07
	18	. .			14.08
	21	. .			11.90
	29	. .			12.25

Weisse III. 746, R. 3h. 38m. 43s.

Jan.	14	. .	—	9	28 48.59

Weisse III. 924, R. 3h. 47m. 25s.

Jan.	11	. .	—	9	57 56.00

γ¹ Eridani, R. 3h. 51m. 2s.

Jan.	12	. .	—	13	56 17.59
Dec.	8	. .			19.81
	21	. .			19.56
	29	. .			19.29

Weisse IV. 114, R. 4h. 6m. 22s.

Jan.	11	. .	—	10	46 17.11

Eridani, 1303, R. 4h. 7m. 16s.

Jan.	11	. .	—	10	37 54.44
	14	. .			56.06

Anonymous, R. 4h. 19m. 53s.

Dec.	18	. .	+	14	44 59.81

Tauri, 1395, R. 4h. 22m. 37s

Dec.	18	. .	+	14	46 38.15

α Tauri, R. 4h. 27m. 19s.

Nov.	11	. .	+	16	12 (10.12)
	17	. .			11.19
Dec.	3	. .			11.36

Wiesse IV. 733, R. 4h. 33m. 36s.

Dec.	3	. .	+	14	2 3.31
	22	. .			3.33

Wiesse IV. 794, R. 4h. 36m. 15s.

Dec.	3	. .	+	14	20 36.99

Wiesse IV. 824, R. 4h. 38m. 5s.

Dec.	3	. .	+	14	15 12.19
	22	. .			13.06

Eridani, 1545, R. 4h. 52m. 58s.

Feb.	23	. .	—	12	45 43.44

α Aurigæ, R. 5h. 5m. 37s.

.	23	. .	+	45 50	22.52
.	17	. .			20.56
.	8	. .			19.80
	21	. .			20.09

β Orionis, R. 5h. 7m. 20s.

.	5	. .	—	8 22	44.05

β Tauri, R. 5h. 16m. 49s.

.	5	. .	+	28 28	30.98
.	8	. .			29.77

Weisse V. 449, R. 5h. 18m. 44s.

.	23	. .	—	13 15	57.97
rch	6	. .			59.01

Weisse V. 603, R. 5h. 24m. 20s.

.	5	. .	—	0 23	59.76
rch	10	. .			59.53

δ Orionis, R. 5h. 24m. 21s.

.	5	. .	—	0 24	52.93
rch	10	. .			52.36
v.	17	. .			53.27
.	22	. .			51.46

ε Orionis, R. 5h. 28m. 36s.

.	12	. .	—	1 18	5.62
rch	24	. .			7.15

ι Columbæ, R. 5h. 34m. 13s.

rch	10	. .	—	34 9	25.70

κ Orionis, R. 5h. 40m. 39s.

.	6	. .	—	9 43	37.64
.	12	. .			35.68
rch	6	. .			37.05
	10	. .			36.52
	24	. .			37.16

α Orionis, R. 5h. 47m. 3s.

.	22	. .	+	7 22	28.41
	28	. .			27.22

Leporis, 1901, R. 5h. 49m. 34s.

.	12	. .	—	14 11	54.45
ch	6	. .			56.43
	24	. .			56.59

Weisse V. 1372, R. 5h. 53m. 22s.

	12	. .	—	14 11	13.68
ch	6	. .			15.81

Weisse V. 1479, R. 5h. 57m. 30s.

ch	6	. .	—	14 4	58.63
	10	. .			58.37

Weisse V. 1487, R. 5h. 57m. 42s.

ch	6	. .	—	14 1	39.64
	10	. .			39.85

Weisse V. 1500, R. 5h. 58m. 0s.

Feb.	12	. .	—	14 6	49.59
March	6	. .			49.64
	10	. .			50.78

μ Geminorum, R. 6h. 13m. 53s.

March	8	. .	+	22 35	7.93
Dec.	28	. .			6.77

51 (Hev.) Cephei, R. 6h. 28m. 33s.

		hh.				
March	8,	1.0	.	+	87 15	22.06
	10,	1.2	.			22.71
	18,	1.2	.			23.03
	24,	1.2	.			23.05
Dec.	28,	1.0	.			20.42

51 (Hev.) Cephei (S. P.)

		hh.				
Aug.	19,	1.2	.	+	87 15	21.32

α Canis Majoris, R. 6h. 38m. 32s.

Jan.	6	. .	—	16 30	48.54
Mar.	6	. .			49.89
	8	. .			48.72
Dec.	28	. .			49.73

ε Canis Majoris, R. 6h. 52m. 44s.

Feb.	1	. .	—	28 46	14.77
Mar.	6	. .			16.73
	8	. .			16.51
	18	. .			17.87
Dec.	28	. .			18.06

Weisse VII, 250, R. 7h. 8m. 14s.

Feb.	12	. .	—	14 21	6.94
Mar.	6	. .			7.60

Weisse VII, 283, R. 7h. 9m. 11s.

Feb.	1	. .	—	14 14	54.54
	12	. .			55.07

Weisse VII, 316, R. 7h. 10m. 12s.

Mar.	6	. .	—	14 35	3.55

δ Geminorum, R. 7h. 11m. 9s.

Jan.	6	. .	+	22 15	12.86
Mar.	8	. .			14.09

a^1 Geminorum, R. 7h. 25m. 0s.

Jan.	6	. .	+	32 12	41.20
Feb.	1	. .			41.82
Mar.	6	. .			40.50
April	3	. .			40.38

a^2 Geminorum, R. 7h. 25m. 1s.

Jan.	6	. .	+	32 12	44.51
Feb	1	. .			44.36
Mar.	6	. .			42.44
	8	. .			44.16
April	3	. .			42.22

α Canis Minoris, R. 7h. 31m. 27s.

Jan.	6	. .	+	5 36	20.70
Feb.	1	. .			22.32
Mar.	6	. .			21.05
April	3	. .			19.57
Dec.	28	. .			20.39

β Geminorum, R. 7h. 36m 8s.

Feb.	1	. .	+	28 23	1.61
Mar.	8	. .			2.56
	24	. .			2.00
April	3	. .			0.34
Dec.	28	. .			2.57

15 Argus, R. 8h 11m. 9s.

Mar.	25	. .	—	23 52	30.53
April	3	. .			31.12
Dec.	28	. .			28.30

ε Hydræ, R. 8h. 38m. 50s.

Feb.	1	. .	+	6 57	57.12
Mar.	19	. .			57.00
	20	. .			58.01
	25	. .			55.61

ι Ursæ Majoris, R. 8h. 48m. 55s.

Mar.	19	. .	+	48 37	34.81
	25	. .			35.95
	31	. .			35.71
April	2	. .			36.12

α Hydræ, R. 9h. 20m. 13s.

Mar.	19	. .	—	8 0	38.54
	20	. .			38.68
	31	. .			37.96
April	20	. .			39.92

ϑ Ursæ Majoris, R. 9h. 22m. 48s.

Feb.	1	. .	+	52 21	28.84
Mar.	20	. .			29.09
April	2	. .			27.11

ε Leonis, R. 9h. 37m. 20s.

Feb.	1	. .	+	24 27	44.07
Mar	19	. .			43.59
	20	. .			45.19
	25	. .			44.46
	31	. .			44.83
April	2	. .			44.00
	20	. .			43.87

α Leonis, R. 10h. 0m. 23s.

Feb.	1	. .	+	12 41	55.10
Mar.	19	. .			53.15
	20	. .			55.09
	25	. .			55.23
	31	. .			55.48
April	2	. .			54.51
	20	. .			53.34

α Ursæ Majoris, R. 10h. 54m. 26s.

Mar.	31	. .	+	62 33	35.89
April	2	. .			34.89
	20	. .			34.11

α Ursæ Majoris, S. P.

Sept.	6	. .	+	62 33	34.32
Nov.	11	. .			35.99

δ Leonis, R. 11h. 6m. 7s.

Mar.	31	. .	+	21 20	41.89
April	2	. .			42.30
	3	. .			41.43
	20	. .			41.53

δ Hydræ et Crat. R. 11h. 11m. 51

Mar.	31	. .	—	13 58	0.97
April	2	. .			1.86
	3	. .			1.29
	20	. .			1.93

γ Ursæ Majoris, R. 11h. 45m. 55s

Mar.	31	. .	+	54 31	43.19
April	2	. .			42.88
	3	. .			43.18
	13	. .			43.32
	20	. .			42.67

β Corvi, R. 12h. 26m. 31s.

April	2	. .	—	22 33	59.73
	20	. .			59.77

12 Canum Venat., R. 12h. 49m. 0s

April	2	. .	+	39 7	46.92
May	20	. .			46.86

+ 0″.06 applied for errors of div.

η Ursæ Majoris, R. 13h 41m. 37s.

May	20	. .	+	50 3	49.64
	25	. .			49.00
Oct.	9	. .			47.59

η Bootis, R. 13h. 47m. 32s.

May	17	. .	+	19 9	7.21
	20	. .			6.54

α Bootis, R. 14h. 8m. 49s.

May	17	. .	+	19 57	57.11
	20	. .			57.10
June	7	. .			56.22
Oct	9	. .			56.16
	11	. .			55.48

ε Bootis, R. 14h. 38m. 26s

May	17	. .	+	29 42	33.61
	20	. .			34.03
June	7	. .			32.99

Libræ, 4894, R. 14h. 42m. 24s.

May	17	. .	—	15 22	10.84
June	7	. .			11.55

a^2 Libræ, R. 14h 42m. 35s.

May	17	. .	—	15 24	53.15
June	7	. .			54.94

β Ursæ Minoris, R. 14h. 51m. 12s.

				°	′	″
May	17	.	.	+ 74	46	6.14
June	7	.	.			6.05
Oct.	4	.	.			6.57

β Ursæ Minoris, S. P.

Jan.	5	.	.	+ 74	46	6.55

β Libræ, R. 15h. 8m. 56s.

May	17	.	.	— 8	49	(30.04)
June	7	.	.			32.40

α Coronæ Bor. R. 15h. 28m. 20s.

June	7	.	.	+ 27	13	20.61
Oct.	4	.	.			20.36

α Serpentis, R. 15h. 36m. 53s.

June	7	.	.	+ 6	54	4.47

ζ Ursæ Minoris, R. 15h. 49m. 32s.

June	7	.	.	+ 78	15	11.01

ζ Ursæ Minoris, S. P.

Jan.	5	.	.	+ 78	15	11.73
Dec.	3	.	.			10.01

β¹ Scorpii, R. 15h. 56m. 43s.

June	7	.	.	— 19	23	25.00

β² Scorpii, R. 15h. 56m. 44s.

June	7	.	.	— 19	23	13.49

δ Ophiuchi, R. 16h. 6m. 29s.

June	7	.	.	— 3	18	14.67

α Scorpii, R. 16h. 20m. 13s.

June	7	.	.	— 26	5	37.86

ε Ursæ Minoris, R. 17h. 1m. 31s.

July	6	.	.	+ 82	16	30.90

Weisse XVII, 83, R. 17h. 5m. 25s.

Aug.	11	.	.	— 9	6	2.29

α Herculis, R. 17h. 7m. 48s.

July	6	.	.	+ 14	33	55.36
	12	.	.			55.04
	15	.	.			54.80

β Draconis, R. 17h. 27m. 3s.

July	6	.	.	+ 52	24	52.25
	15	.	.			50.95

α Ophiuchi, R. 17h. 27m. 58s.

July	6	.	.	+ 12	40	24.01
	12	.	.			24.08
	15	.	.			25.23

γ Draconis, R. 17h. 53m. 7s.

				°	′	″
July	6	.	.	+ 51	30	29.87
	12	.	.			30.53
	15	.	.			29.58

μ¹ Sagittarii, R. 18h. 4m. 47s.

July	15	.	.	— 21	5	33.44

+0.″16 applied for error of divis'n.

δ Ursæ Minoris, R. 18h. 20m. 44s.

		hh.					
Aug.	11,	1.2	.	+ 86	35	48.84
	19,	1.2	.			48.26

δ Ursæ Minoris, S. P.

		hh.					
Jan.	6,	1.2	.	+ 86	35	49.66
Mar.	10,	1.2	.			49.21
	18,	1.2	.			49.62
	24,	1.2	.			48.61

α Lyræ, R. 18h. 31m. 51s.

Jan.	5	.	.	+ 38	38	50.04
	8	.	.			49.89
	11	.	.			50.09
July	6	.	.			48.99
	12	.	.			49.18
	15	.	.			49.22
	19	.	.			(46.37)
Aug.	2	.	.			48.16
	5	.	.			48.30
	10	.	.			48.23
	11	.	.			49.28
	18	.	.			48.14
	19	.	.			50.22
	25	.	.			49.03
Nov.	18	.	.			48.31
Dec	18	.	.			49.01
	24	.	.			48.24

+0″.11 applied for error of divis'n.

β Lyræ, R. 18h. 44m. 32s.

July	15	.	.	+ 33	11	28.51
	19	.	.			27.70
Aug.	10	.	.			29.12

Lalande, 35137, R. 18h. 44m. 34s.

July	19	.	.	+ 33	10	47.71

ζ Aquilæ, R. 18h. 58m. 31s.

July	15	.	.	+ 13	38	39.36
	19	.	.			(37.00)
Aug.	2	.	.			38.37
	5	.	.			39.97
	10	.	.			39.48
	11	.	.			39.84
	18	.	.			38.86
	19	.	.			39.22
	25	.	.			39.37

η Lyræ, R. 19h. 8m. 39s.

Aug.	2	.	.	+ 38	53	26.16
	5	.	.			25.79
	11	.	.			25.51
	19	.	.			25.65
	25	.	.			26.39

+0″.18 applied for errors of divis'n.

δ Aquilæ, R. 19h. 17m. 56s.

				°	′	″
July	12	.	.	+ 2	49	12.17
	15	.	.			11.59
	19	.	.			10.07
Aug.	2	.	.			11.18
	5	.	.			12.27
	10	.	.			11.13
	18	.	.			12.80
	19	.	.			12.11

γ Aquilæ, R. 19h. 39m. 8s.

Aug.	2	.	.	+ 10	15	4.17
	10	.	.			4.73
	11	.	.			4.91
	18	.	.			6.33
	19	.	.			5.85
Oct	18	.	.			4.54

α Aquilæ, R. 19h. 43m. 28s.

July	12	.	.	+ 8	28	34.13
Aug.	11	.	.			32.89
	18	.	.			35.29
	19	.	.			33.50

β Aquilæ, R 19h. 47m. 57s.

July	12	.	.	+ 6	2	10.33
Aug.	10	.	.			9.09
	11	.	.			9.30
	18	.	.			9.41
	19	.	.			8.51
Oct.	18	.	.			8.40

Weisse XIX, 1259, R. 19h. 50m. 0s.

Oct.	1	.	.	— 14	24	33.91

Weisse XIX, 1319, R. 19h. 52m. 42s.

Oct.	1	.	.	— 14	20	53.57
	4	.	.			51.79
	9	.	.			53.01
	11	.	.			53.79
	15	.	.			53.87
	16	.	.			53.85

Anonymous, R. 19h. 58m. 41s.

Oct.	9	.	.	— 14	16	25.60

Anonymous R. 20h. 0m. 4s.

Oct.	9	.	.	— 14	16	53.41

Anonymous, R. 20h. 2m. 59s.

Oct.	9	.	.	— 14	17	47.02

Anonymous, R. 20h. 3m. 6s.

Oct.	11	.	.	— 14	13	12.76
	15	.	.			14.92

Anonymous, R. 20h. 3m. 45s.

Oct.	15	.	.	— 14	17	57.72

Anonymous, R. 20h. 4m. 13s.

Oct.	15	.	.	— 14	7	5.97
	18	.	.			11.08

Weisse XX, 81, R. 20h. 4m. 24s.

				°	′	″
Oct.	11	.	.	— 14	14	4.10

Weisse XX, 101, R. 20h. 4m. 56s.

Oct.	15	.	.	— 14	7	33.02
	18	.	.			33.28

Anonymous, R. 20h. 6m. 26s.

Oct	15	.	.	— 14	6	28.00

Weisse XX, 145, R. 20h. 6m. 45s.

Oct.	28	.	.	— 13	50	5.13

Anonymous, R. 20h. 8m. 7s.

Oct.	16	.	.	— 14	1	4.01

Anonymous, R. 20h. 8m. 11s.

Oct.	18	.	.	— 14	1	37.46

α¹ Capricorni, R. 20h. 9m. 20s.

July	12	.	.	— 12	58	2.28
Aug.	18	.	.			2.58

α² Capricorni, R. 20h. 9m. 44s.

July	12	.	.	— 13	0	19.67
Aug.	10	.	.			21.29
	18	.	.			19.26

Weisse, XX, 268, R. 20h. 11m. 24s.

Oct.	16	.	.	— 13	55	11.87
	26	.	.			6.49

Weisse, XX, 284, R. 20h. 12m. 3s.

Oct.	26	.	.	— 13	49	7.17
	28	.	.			8.73

Weisse XX, 296, R. 20h. 12m. 22s.

Oct.	16	.	.	— 14	7	52.10
	18	.	.			50.16

λ Ursæ Minoris, R. 20h. 13m. 2s.

		hh.					
July	12,	1.0	.	+ 88	51	37.67
Aug.	5,	1.5	.			37.50
	11,	1.4	.			38.12
	19,	1.3	.			36.77
	19,	1.3	(ref.)			36.39
	25,	1.5	.			37.60

λ Ursæ Minoris, S. P.

		hh.					
Feb.	1,	1.4	.	+ 88	51	37.76
Mar.	31,	1.4	.			38.78

Anonymous, R. 20h. 14m. 19s.

Oct.	27	.	.	— 13	42	21.72
	28	.	.			20.69

Weisse XX, 359, R. 20h. 14m. 44s.

Oct.	28	.	.	— 13	41	20.39

ANONYMOUS, R. 20h. 15m. 27s.

				°	′	″
.	27	. .	—	13	47	33.67

WEISSE XX, 387, R. 20h. 15m. 45s.

				°	′	″
.	26	. .	—	13	52	25.36
	27					27.17

WEISSE XX, 498, R. 20h. 20m. 4s.

				°	′	″
.	28	. .	—	13	38	47.29

WEISSE XX, 499, R. 20h. 20m. 5s.

				°	′	″
.	28	. .	—	13	38	40.78

WEISSE XX, 545, R. 20h. 21m. 56s.

				°	′	″
v.	2	. .	—	13	31	28.56
	3	. .				28.97

WEISSE XX, 729, R. 20h. 28m. 37s.

				°	′	″
v.	6	. .	—	13	15	7.82

α CYGNI, R. 20h. 36m. 19s.

				°	′	″
ug.	2	. .	+	44	44	47.71
	11	. .				47.47
	18	. .				46.81
	19	. .				47.53
	25	. .				46.41
t.	1	. .				47.59

61¹ CYGNI, R. 21h. 0m. 10s.

				°	′	″
ug.	2	. .	+	38	0	52.26
	18	. .				51.71
	19	. .				52.88
	25	. .				51.64
t.	1	. .				52.13
	9	. .				51.67

61² CYGNI, R. 21h. 0m. 11s.

				°	′	″
g.	2	. .	+	38	0	48.53
	19	. .				48.23
	25	. .				47.15
t.	9	. .				48.87

ANONYMOUS, R. 21h. 4m. 11s.

				°	′	″
Sept.	27	. .	—	12	31	34.85

ANONYMOUS, R. 21h. 4m. 18s.

				°	′	″
Sept.	27	. .	—	12	25	45.74

ζ CYGNI, R. 21h. 6m. 33s.

				°	′	″
July	12	. .	+	29	36	50.46
Aug.	5	. .				49.61
	11	. .				51.11
Sept.	28	. .				50.20
	29	. .				51.94
Oct.	1	. .				50.98
	8	. .				50.93

α CEPHEI, R. 21h. 15m. 0s.

					°	′	″
July	12	. .	+	61	57	2.78
Aug.	2	. .				3.84
	5	. .				3.82
	11	. .				4.36
	19	. .		(ref.)		6.16
	19	. .				3.48
	25	. .				5.10
	25	. .		(ref.)		4.57
Sept.	29	. .				3.51
Oct.	8	. .				4.53
	21	. .				5.45

β AQUARII, R. 21h. 23m. 39s.

				°	′	″
July	12	. .	—	6	13	41.50
Sept.	27	. .				41.89
	29	. .				41.61
Oct.	1	. .				41.88
	9	. .				41.77

β CEPHEI, R. 21h. 26m. 42s.

				°	′	″
July	12	. .	+	69	54	11.03
Aug.	2	. .				9.08
	5	. .				8.58
	11	. .				9.62
	19	. .				8.98
	25	. .				8.78
Oct.	1	. .				9.99
	8	. .				9.81
	9	. .				10.79
	21	. .				9.80

ε PEGASI, R. 21h. 36m. 49s.

				°	′	″
July	12	. .	+	9	11	22.28
Aug.	2	. .				22.25
	5	. .				22.36
	11	. .				23.06
	19	. .				22.63
	25	. .				23.20
Sept.	27	. .				22.76
	28	. .				22.75
Oct.	1	. .				22.68
	8	. .				22.48
	9	. .				23.65
	21	. .				23.44
Nov.	18	. .				22.38
	20	. .				22.02

α AQUARII, R. 21h. 58m. 5s.

				°	′	″
Oct.	9	. .	—	1	2	46.70
Nov.	29	. .				47.80

ϵ^2 AQUARII, 7722, R. 22h. 2m. 36s.

				°	′	″
Aug.	2	. .	—	12	18	2.59
	5	. .				2.96
	18	. .				2.17
	19	. .				0.90
	26	. .				0.91
	30	. .				1.83

WEISSE XXII, 59, R. 22h. 3m. 35s.

				°	′	″
Nov.	18	. .	—	11	45	44.28
	20	. .				43.99

ANONYMOUS, R. 22h, 4m. 11s

				°	′	″
Aug.	18	. .	—	12	20	5.08

AQUARII, 7740, R. 22h. 4m. 17s.

				°	′	″
Oct.	8	. .	—	11	48	12.63
	11	. .				11.68
	15	. .				11.44
Nov.	11	. .				13.47
	20	. .				11.27

WEISSE XXII, 105, R. 22h. 5m. 5

				°	′	″
Aug.	19	. .	—	12	19	46.0
	26	. .				46.2

ζ PEGASI, R. 22h. 33m. 59s.

				°	′	″
Oct.	9	. .	+	10	3	1.3

α PISCIS AUSTRALIS, R. 22h. 49m. 2

				°	′	″
Oct	9	. .	—	30	24	55.4
	20	. .				57.4
	21	. .				56.6
Nov.	5	. .				56.8
	11	. .				55.2
	17	. .				57.9
	20	. .				54.8

α PEGASI, R. 22h. 57m. 17s.

				°	′	″
Aug.	30	. .	+	14	23	57.4
Oct.	8	. .				56.7
	21	. .				58.0
	27	. .				58.2
Nov.	5	. .				58.0
	6	. .				58.3
	17	. .				57.1
	20	. .				59.5

ι PISCIUM, R. 23h. 32m. 14s.

				°	′	″
Nov.	5	. .	—	4	48	49.9
	11	. .				51.0
	29	. .				49.1

γ CEPHEI, R. 23h. 33m. 14s.

				°	′	″
Sept.	6	. .	+	76	47	44.6
	28	. .				43.8
Oct.	9	. .				43.2
	20	. .				43.8
	21	. .				43.1
	27	. .				43.6

γ CEPHEI, S. P.

				°	′	″
Mar.	31	. .	+	76	47	41.0

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THE MERIDIAN CIRCLE.

1847.

NATIONAL OBSERVATORY.

α Andromedæ.

			AR h. m. s.	Dec. ° ′ ″
Feb.	6	. .	0 0 38.64	+28 15 44.86
April	25	. .	38.58	. .
May	5	. .	38.65	. .
Aug.	12	. .	38.47	. .
	18	. .	38.71	42.24
	26	. .	38.71	42.04
Sept.	1	. .	38.50	. .
	10	. .	38.75	. .
	15	. .	38.30	43.37
	26	. .	38.68	46.47
Oct.	14	. .	38.59	42.80
	20	. .	38.30	41.62
	25	. .	38.48	49.36
	29	. .	38.77	43.32
Nov.	2	. .	38.53	45.07
	3	. .	38.57	49.16
	5	. .	38.79	47.95
	11	. .	38.62	44.85
	16	. .	38.56	. .
	17	. .	38.66	(53.54)
	29	. .	38.75	42.34
	30	. .	38.80	41.44
Dec.	8	. .	38.59	42.07
	18	. .	38.71	41.16
	21	. .	38.52	40.70

γ Pegasi.

Jan.	5	. .	0 5 31.02	+14 20 57.02
Aug.	12	. .	31.00	59.12
	18	. .	30.88	57.75
	26	. .	31.12	58.03
Sept.	1	. .	30.88	58.98
	3	. .	21.21	60.73
	4	. .	30.76	59.39
	26	. .	31.10	60.74
Oct.	14	. .	30.86	56.77
	22	. .	30.91	55.77
	25	. .	30.91	56.34
	27	. .	30.95	59.50
	29	. .	31.07	57.02
Nov.	2	. .	30.94	58.99
	16	. .	30.89	. .
	29	. .	30.86	59.48
Dec.	8	. .	30.72	(52.77)
	18	. .	30.91	56.51
	21	. .	30.81	55.00

α Cassiopeiæ.

Jan.	6	. .	0 32 1.45	+55 42 . .
	8	. .	1.80	48.26
Aug.	2	. .	1.81	. .
	12	. .	1.63	48.60
	18	. .	1.68	49.62
	26	. .	(1.95)	47.75

α Cassiopeiæ—(Continued.)

			AR h. m. s.	Dec. ° ′ ″
Sept.	26	. .	0 32 1.63	+55 42 50.28
Oct.	14	. .	1.80	48.32
	20	. .	1.74	50.52
	22	. .	1.54	46.46
	25	. .	1.52	49.94
	27	. .	1.60	49.07
	29	. .	1.49	47.81
Nov.	11	. .	1.59	46.11
	29	. .	1.74	49.25
	30	. .	1.29	51.03
Dec.	18	. .	1.59	47.55
	21	. .	1.62	41.67

β Ceti.

Jan.	6	. .	0 36 3.47	−18 48 40.93
	11	. .	3.59	34.45
July	18	. .	3.37	. .
Sept.	26	. .	(3.04)	37.60
Oct.	25	. .	(3.10)	40.25
Nov.	29	. .	3.34	33.81

δ Piscium.

Oct.	22	. .	0 40 58.57	+ 6 49 2.84

ε Piscium.

Jan.	5	. .	0 55 9.82	+ 7 4 51.94

Polaris.

Jan.	6	. .	1 4 60.90	+88 30 33.60
Feb.	25	. .	61.80	35.52
Mar.	5	. .	59.24	34.89
	6	. .	57.35	36.36
	10	. .	62.49	34.09
	17	. .	64.90	31.61
April	3	. .	(55.40)	36.89
	6	. .	61.36	33.08
	8	. .	60.79	34.34
	25	. .	58.98	33.76
May	5	. .	60.16	33.76
	17	. .	59.64	36.49
	27	. .	65.69	. .
July	18	. .	(53.18)	36.56
Aug.	12	. .	57.39	32.69
	18	. .	64.13	32.55
	26	. .	65.97	. .
Sept.	13	. .	63.80	33.77
	15	. .	59.10	34.89
	21	. .	61.79	34.80
	26	. .	62.49	32.31
Oct.	4	. .	(66.26)	33.72
	14	. .	65.84	33.50
	20	. .	68.32	32.74
	21	. .	62.38	30.28

Polaris—(Continued.)

			AR h. m. s.	Dec. ° ′ ″
Oct.	22	. .	1 4 66.97	+88 30 31.60
	25	. .	63.90	32.67
	27	. .	(68.31)	33.43
	29	. .	65.85	32.65
Nov.	2	. .	60.52	35.36
	5	. .	58.70	31.95
	11	. .	58.13	(28.29)
	17	. .	63.25	35.52
	29	. .	58.19	33.88
Dec.	18	. .	64.21	33.85
	21	. .	(67.85)	(29.86)

Polaris, S. P.

Feb.	5	. .	1 4 60.31	+88 30 . .
March	5	. .	60.67	36.22
	16	. .	59.78	39.26
	29	. .	65.37	39.34
April	2	. .	(69.01)	36.07
	4	. .	64.99	34.76
	14	. .	60.04	. .
	20	. .	59.85	36.01
	22	. .	58.01	36.64
	24	. .	56.80	35.88
May	20	. .	62.45	37.71
June	7	. .	65.32	33.64
	9	. .	66.52	31.70
	15	. .	65.41	35.56
	17	. .	64.28	35.54
	26	. .	59.52	. .
July	14	. .	59.24	. .
Sept.	3	. .	60.44	35.96
	15	. .	(68.03)	35.25
	16	. .	66.86	37.37
	17	. .	65.49	34.70
Oct.	14	. .	65.79	33.03
	18	. .	59.40	32.40
	20	. .	61.12	35.16
	25	. .	56.50	38.11
	27	. .	58.55	39.00
	29	. .	57.56	36.00
Nov.	1	. .	59.12	31.97

ϑ¹ Ceti.

Jan.	8	. .	1 16 31.56	− 8 57 26.27
	11	. .	31.39	28.70
	12	. .	31.52	29.44
	14	. .	31.64	30.71
	22	. .	31.66	(25.70)
Dec.	29	. .	31.78	27.2

γ¹ Arietis.

Jan.	22	. .	1 45 18.35	+18 33 34.2

α Arietis.

		Æ h. m. s.	Dec. ° ′ ″
. 8	. .	1 58 43.41	+22 44 (67.56)
11	. .	43.38	64.02
12	. .	43.55	61.92
14	. .	43.60	64.71
22	. .	43.47	63.92
. 4	. .	(44.00)	64.83
6	. .	43.46	66.43
. 18	. .	43.55	. .
. 12	. .	43.50	(58.54)
14	. .	43.71	62.43
20	. .	43.57	63.20
25	. .	43.72	63.37
29	. .	43.55	62.62
. 2	. .	43.59	63.92
5	. .	43.62	64.07
11	. .	43.53	. .
16	. .	43.50	. .
18	. .	43.60	62.56
29	. .	43.67	. .

γ Ceti.

11	. .	2 35 32.12	+ 2 35 66.82
4	. .	(31.48)	64.40
6	. .	31.66	62.76
. 12	. .	32.17	59.73
. 17	. .	31.74	60.12
14	. .	32.08	60.82
25	. .	31.92	63.44
29	. .	32.00	. .
. 16	. .	31.98	. .
17	. .	32.09	(67.72)
3	. .	32.00	62.94
18	. .	32.06	60.44
21	. .	31.90	62.38
29	. .	31.98	64.86

α Ceti.

11	. .	2 54 26.69	+ 3 29 55.42
4	. .	26.75	54.56
5	. .	26.48	52.99
6	. .	. .	55.04
12	. .	26.42	. .
. 12	. .	26.74	50.23
14	. .	26.36	51.09
20	. .	26.62	55.41
25	. .	26.60	55.46
. 17	. .	26.54	(58.53)
30	. .	26.65	(59.16)
3	. .	26.68	54.89
18	. .	26.51	52.28
21	. .	26.58	52.69
29	. .	26.78	56.46

α Persei.

			Æ h. m. s.	Dec. ° ′ ″
Jan.	12	. .	3 13 38.44	+49 19 20.16
	14	. .	38.32	24.24
Feb.	4	. .	(37.79)	19.15
	5	. .	38.44	19.51
	6	. .	38.54	22.01
	12	. .	38.47	20.93
April	13	. .	38.37	. .
Sept.	17	. .	38.46	20.84
Oct.	14	. .	38.40	19.25
	25	. .	38.40	21.19
Nov.	5	. .	(38.16)	19.20
	17	. .	(38.15)	(24.74)
	29	. .	38.50	19.84
Dec.	3	. .	38.24	19.34
	8	. .	38.41	20.47
	21	. .	38.27	(17.66)
	29	. .	(38.18)	20.77

ξ Tauri.

Oct.	25	. .	3 19 2.72	+ 9 12 23.57

δ Eridani, 1148.

Jan.	5	. .	3 36 4.03	—10 16 34.99

η Tauri.

Jan.	11	. .	3 38 34.49	+23 38 17.72
	12	. .	34.63	14.33
Feb.	4	. .	34.26	14.68
April	9	. .	34.81	17.52
Oct.	25	. .	34.59	13.62
Nov.	11	. .	34.73	. .
	17	. .	34.60	(20.64)
	29	. .	34.32	13.55
Dec.	3	. .	34.77	13.10
	8	. .	34.46	17.31
	18	. .	34.78	13.68
	21	. .	34.60	13.97
	29	. .	34.30	15.59

γ^1 Eridani.

Jan.	8	. .	3 51 (2.58)	—13 56 21.76
	11	. .	2.25	17.62
	14	. .	1.92	18.72
	4	. .	2.11	18.95
Feb.	23	. .	1.60	17.40
Nov.	11	. .	1.75	16.10
Dec.	8	. .	1.87	22.77
	18	. .	1.58	22.12
	21	. .	2.03	17.30
	29	. .	1.70	14.32

α Tauri.

			Æ h. m. s.	Dec. ° ′ ″
Jan.	8	. .	4 27 19.13	+16 12 (7.00)
	11	. .	19.29	11.49
Feb.	5	. .	19.00	14.89
	6	. .	19.07	10.74
April	7	. .	19.21	11.09
	8	. .	19.07	10.43
	9	. .	19.03	9.46
	13	. .	19.04	12.34
	18	. .	(18.66)	14.48
	22	. .	19.38	10.03
Nov.	3	. .	(18.75)	11.68
	18	. .	18.84	. .
	23	. .	19.17	11.52
	28	. .	19.38	9.50

Eridani, 1545.

Feb.	23	. .	4 52 57.36	—12 45 44.35

α Aurigæ.

Jan.	12	. .	5 5 36.65	+45 50 20.48
Feb.	4	. .	(36.51)	. .
Mar.	8	. .	37.26	20.75
	10	. .	36.80	19.71
	22	. .	37.16	20.64
May	6	. .	36.85	. .
	8	. .	37.02	. .
July	13	. .	36.87	18.94
Dec.	8	. .	37.05	18.80

β Orionis.

Jan.	5	. .	5 7 19.78	— 8 22 44.72
	6	. .	19.78	42.97
Feb.	23	. .	19.94	39.69
Dec.	3	. .	19.85	44.35
	6	. .	19.84	43.80
	21	. .	19.68	41.46
	23	. .	19.66	45.38
	28	. .	19.80	46.94

β Tauri.

Jan.	6	. .	5 16 48.81	+28 28 31.24
	14	. .	48.83	32.91
Mar.	5	. .	48.80	(27.56)
	18	. .	48.90	33.65
	24	. .	48.74	(26.86)
May	8	. .	48.66	. .
Nov.	29	. .	48.94	33.66
	30	. .	48.62	30.46
Dec.	3	. .	49.09	31.21
	6	. .	48.90	29.92
	18	. .	48.78	31.67
	21	. .	48.93	(35.93)
	23	. .	48.87	30.27
	28	. .	49.02	29.02

Weisse V, 449.

		Æ h. m. s.	Dec. ° ′ ″
Mar.	6 . .	5 18 44.95	—13 15 56.76

δ Orionis.

Jan.	6 . .	5 24 20.70	— 0 24 49.66
	8 . .	20.78	54.18
	14 . .	20.58	52.16
Feb.	4 . .	20.59	54.96
	11 . .	20.74	52.26
	23 . .	20.80	53.34
Mar.	5 . .	20.70	53.60
	8 . .	20.80	52.77
	10 . .	20.60	53.42
Dec.	3 . .	20.79	51.04
	6 . .	20.64	. .
	7 . .	(20.17)	. .
	8 . .	20.57	53.29
	23 . .	20.49	53.81

α Leporis.

Jan.	12 . .	5 26 7.30	—17 56 0.81

ε Orionis.

March	18 . .	5 28 36.23	— 1 18 4.32
Nov.	29 . .	36.18	5.74
Dec.	6 . .	36.23	7.56
	7 . .	36.25	. .
	8 . .	36.13	8.25
	28 . .	(35.88)	. .

α Columbæ.

Jan.	6 . .	5 34 13.31	—34 9 30.09
	14 . .	13.25	23.33
Dec.	3 . .	12.89	29.04

α Orionis.

Jan.	5 . .	5 47 2.83	+ 7 22 25.94
	6 . .	3.12	28.59
	11 . .	3.08	26.03
	14 . .	2.95	27.62
	21 . .	3.42	24.98
Feb.	4 . .	2.89	23.70
	11 . .	3.08	27.62
	12 . .	3.07	29.49
March	5 . .	3.45	27.25
	8 . .	3.47	29.06
	18 . .	3.25	28.47
	22 . .	3.42	25.61
June	2 . .	3.11	29.05
Dec.	3 . .	2.99	31.41
	6 . .	2.98	28.07
	8 . .	3.17	26.29
	23 . .	3.28	28.00
	~~ .	3.28	26.91

Leporis, 1901.

		Æ h. m. s.	Dec. ° ′ ″
March	6 . .	5 49 34.98	
	24 . .	35.29	

μ Geminorum.

Jan.	5 . .	6 13 53.29	+22 35 8.43
	12 . .	52.95	10.36
Feb.	11 . .	53.05	(10.04)
March	18 . .	52.83	7.51
	24 . .	53.11	9.06
April	3 . .	52.98	7.70
Dec.	6 . .	53.12	8.17

51 (Hev.) Cephei.

Jan.	6 . .	6 28 35.56	+87 15 21.51
	11 . .	31.58	(17.54)
	14 . .	32.75	21.13
Feb.	9 . .	32.49	22.72
Dec.	28 . .	33.92	. .

51 (Hev.) Cephei, S. P.

Sept.	21 . .	18 28 33.52	

α Canis Majoris.

Jan.	5 . .	6 38 32.40	—16 30 49.62
	8 . .	32.34	52.60
	12 . .	32.34	46.40
	21 . .	. .	46.46
Feb.	11 . .	32.28	46.75
April	3 . .	32.39	51.74
	9 . .	32.27	51.47
	10 . .	32.15	50.64
	12 . .	(32.06)	49.41
	13 . .	32.33	49.54
May	20 . .	(32.19)	. .

ε Canis Majoris.

Jan	11 . .	6 52 43.77	—28 46 18.60
	14 . .	43.84	17.85
Feb.	11 . .	43.87	17.47
April	3 . .	44.03	17.73
	9 . .	43.80	16.53
Dec.	28 . .	43.62	21.49

δ Geminorum.

Jan.	6 . .	7 11 9.81	+22 18 15.14
	11 . .	9.67	12.92
	12 . .	9.69	(16.84)
	14 . .	9.59	15.32
	21 . .	9.98	10.66
Mar.	8 . .	10.09	14.86
April	3 . .	9.53	14.33
	9 . .	9.64	15.87
	13 . .	(9.10)	14.46
Dec.	14 . .	9.50	12.89

a^2 Geminorum.

		Æ hr. m. s.	Dec ° ′ ″
Jan.	6 . .	7 25 9.95	+32 12 40.49
	11 . .	1.37	40.57
	12 . .	(0.76)	45.61
Mar.	8 . .	. .	43.34
	22 . .	1.32	(36.51)
April	9 . .	1.34	42.39
	10 . .	1.49	44.78
	13 . .	1.18	43.67
Dec.	14 . .	1.42	45.59
	28 . .	(1.02)	. .

α Canis Minoris.

Jan.	6 . .	7 31 26.84	+ 5 36 21.93
	11 . .	26.86	22.54
Feb.	11 . .	26.84	21.48
	22 . .	26.75	20.17
Mar.	10 . .	26.96	19.54
	20 . .	27.00	. .
April	9 . .	26.65	. .
	12 . .	27.03	16.18
	13 . .	26.77	. .
	14 . .	26.57	26.16
June	21 . .	26.79	. .
Dec.	28 . .	27.05	18.34

β Geminorum.

Jan.	11 . .	7 36 7.66	+28 22 58.73
Mar.	20 . .	8.13	60.06
April	9 . .	7.78	61.78
	10 . .	7.85	63.80
	13 . .	(7.38)	61.07
June	21 . .	7.75	. .

15 Argus.

Jan.	12 . .	8 1 9.73	—23 52 28.28
	21 . .	9.30	34.80
Feb.	22 . .	. . .	30.70
Mar.	1 . .	9.15	30.73
	15 . .	9.59	. .
	22 . .	9.65	(37.73)
Dec.	28 . .	9.10	30.29

ε Hydræ.

Jan.	21 . .	8 38 49.38	+ 6 57 57.85
Feb.	4 . .	49.72	(58.10)
Mar.	1 . .	49.75	56.95
	4 . .	49.69	56.58
	15 . .	49.39	. .
	20 . .	49.49	58.68
	29 . .	49.61	55.71

ε Ursæ Majoris.

			Æ	Dec.
			h. m. s.	° ′ ″
eb.	4	. .	8 48 54.63	+48 37 33.37
	22	. .	55.12	33.59
lar.	8	. .	54.99	33.97
	15	. .	54.87	. .
	20	. .	54.35	31.70
	29	. .	54.52	33.47
ay	6	. .	54.83	. .

α Hydræ.

n.	21	. .	9 20 . .	— 8 50 37.68
b.	1	. .	12.97	37.07
	4	. .	12.99	37.28
	22	. .	12.99	40.29
ar.	13	. .	12.96	45.36
	29	. .	12.84	42.36
pril	4	. .	12.81	42.51

ϑ Ursæ Majoris.

ar.	1	. .	9 22 47.58	+52 21 31.47
	4	. .	47.59	24.99
	20	. .	47.56	27.81

o Leonis.

b.	1	. .	9 33 9.41	+10 34 29.81

ε Leonis.

b.	21	. .	9 37 19.79	+24 27 47.29
b.	4	. .	20.14	43.25
	22	. .	19.76	45.29
ar.	1	. .	19.54	47.51
	4	. .	19.59	45.70
	13	. .	19.11	45.94
	20	. .	20.10	45.01
	29	. .	19.69	42.61
pril	12	. .	19.60	45.74
	22	. .	19.79	43.68
ay	6	. .	19.66	46.07

α Leonis.

n.	21	. .	10 0 22.70	+12 41 56.52
n.	1	. .	22.53	57.54
	4	. .	(23.20)	53.35
	22	. .	22.70	53.58
eb.	1	. .	22.99	54.18
	4	. .	22.92	55.11
	13	. .	22.44	53.50
	15	. .	22.54	. .
	20	. .	22.64	(60.16)
	29	. .	22.16	55.51
pril	14	. .	22.63	54.92
	20	. .	22.80	54.91
	22	. .	22.82	54.81
ay	6	. .	22.53	. .

Anonymous.

			Æ	Dec.
			h. m. s.	° ′ ″
May	5	. .	10 21 53.25	+37 48 8.09

ρ Leonis.

Feb.	1	. .	10 24 54.56	—10 4 42.24

σ¹ Sextantis.

Feb.	1	. .	10 38 16.89	+ 7 9 49.85

α Ursæ Majoris.

Jan.	21	. .	10 54 25.52	—62 33 32.35
Feb.	1	. .	25.69	. . .
	4	. .	25.71	32.60
Mar.	16	. .	25.53	33.72
	29	. .	25.54	31.17
April	4	. .	(25.11)	33.60
May	24	. .	(24.74)	32.59
June	7	. .	25.54	34.50
	15	. .	25.66	32.89

δ Leonis.

Feb.	1	. .	11 6 7.44	+21 20 44.34
Mar.	1	. .	7.29	41.99
	13	. .	7.58	41.09
Mar.	29	. .	7.71	41.88
April	2	. .	7.16	41.29
	4	. .	7.26	43.38
	12	. .	7.54	(38.84)
	14	. .	7.36	44.39
	22	. .	. .	44.77
May	18	. .	7.36	42.75
	24	. .	7.57	43.15
June	15	. .	7.51	. .
	24	. .	7.30	42.71

δ Hydræ et Crateris.

Feb.	1	. .	11 11 50.69	—13 57 56.49
	4	. .	(51.05)	67.82
Mar.	16	. .	50.53	. .
April	2	. .	50.45	. .

β Leonis.

Mar.	16	. .	11 41 24.42	+15 24 . .
	29	. .	(24.04)	36.76
April	2	. .	24.40	38.02
	4	. .	24.36	39.40
	6	. .	24.25	38.77
	12	. .	24.19	. .
	14	. .	24.55	38.49
	20	. .	24.27	. .
	22	. .	24.31	39.62
May	18	. .	24.31	36.84

β Leonis, (Continued.)

			Æ	Dec.
			h. m. s.	° ′ ″
May	20	. .	11 41 24.19	+15 24 35.87
	24	. .	24.08	. .
June	15	. .	24.24	38.63
	17	. .	24.30	37.73
	24	. .	24.41	38.12

γ Ursæ Majoris.

Jan.	21	. .	11 45 55.23	+54 31 42.59
Mar.	1	. .	55.16	40.12
	16	. .	55.14	43.27
	29	. .	55.27	40.88
April	2	. .	54.63	. .
	20	. .	54.97	39.90
	24	. .	55.03	44.35
June	7	. .	55.13	43.96

Groombridge, 1850.

Mar.	5	. .	11 57 4.99	+86 24 58.57

η Virginis.

April	20	. .	12 10 58.94	+ 0 5 47.06

Groombridge, 1871.

Mar.	5	. .	12 12 23.58	+87 16 8.34

β Corvi.

April	12	. .	12 26 31.08	—22 33 63.50
	22	. .	30.92	60.13
June	7	. .	30.94	58.73
	17	. .	30.79	. .

Canum Venaticorum, 4345.

Mar.	1	. .	12 48 58.57	+39 7 31.17

12 Canum Venaticorum.

Feb.	5	. .	12 48 60.14	+39 7 . .
April	13	. .	59.99	46.92
May	18	. .	60.14	. .
	28	. .	60.31	. .

α Virginis.

Feb.	5	. .	13 17 17.54	—10 22 . .
Mar.	1	. .	17.77	34.88
May	10	. .	(17.34)	. .
	24	. .	17.74	. .
	28	. .	18.12	34.10
June	3	. .	18.06	. .
Aug.	16	. .	17.36	34.88

η Ursæ Majoris.

		Æ	Dec.
		h. m. s.	° ′ ″
April	2 . .	13 41 37.32	+50 3 47.37
	20 . .	37.76	45.71
April	27 . .	37.49	48.97
May	10 . .	37.24	. .
	16 . .	37.75	. .
	20 . .	37.33	44.59
	28 . .	37·54	49.36
	29 . .	37.47	. .
June	13 . .	37.89	. .
	15 . .	37.46	47.66

η Bootis.

Mar.	16 . .	13 47 32.43	+19 9 3.60
April	2 . .	32.40	4.81
	20 . .	32.62	5.09
May	10 . .	(32.03)	. .
	16 . .	32.50	. .
	17 . .	32.83	7.05
	20 . .	32.47	(1.66)
June	3 . .	32.37	7.07
	7 . .	32.40	. .
	11 . .	32.67	7.18
	17 . .	32.58	6.02

α Bootis.

Mar.	16 . .	14 8 49.42	+19 57 54.88
April	2 . .	48.91	56.85
	4 . .	49.20	57.47
	14 . .	49.33	57.59
	20 . .	49.20	57.08
	22 . .	49.27	56.12
	24 . .	49.20	. .
	27 . .	49.13	58.17
May	10 . .	48.87	. .
	16 . .	49.18	58.55
	20 . .	49.27	(59.70)
	28 . .	(48.52)	. .
	29 . .	49.14	. .
June	3 . .	49.00	. .
	11 . .	49.10	. .
	13 . .	48.94	58.27
	15 . .	49.34	58.47
	17 . .	. .	57.77
	24 . .	49.16	57.29
July	13 . .	49.08	56.51
Sept.	14 . .	49.24	56.82
	15 . .	49.23	56.61
	16 . .	49.42	57.39
	17 . .	49.34	57.26
	22 . .	49.03	58.01
	29 . .	49.15	59.27
Oct.	20 . .	49.27	57.19
	29 . .	49.31	. .
Nov.	26 . .	49.13	. .

ε Bootis.

		Æ	Dec.
		h. m. s.	° ′ ″
Mar.	16 . .	14 38 26.04	+27 42 30.58
April	2 . .	(26.51)	31.69
	4 . .	26.26	32.38
	20 . .	26.08	34.54
May	10 . .	(25.50)	. .
	16 . .	26.33	. .
	17 . .	(26.60)	35.38
	20 . .	26.23	35.77
June	3 . .	26.22	33.21
	7 . .	26.11	37.35
	15 . .	25.95	33.23
	17 . .	26.09	. .
July	13 . .	26.25	34.39
Aug.	5 . .	25.91	34.78
Sept.	17 . .	26.44	31.33

α² Libræ.

April	20 . .	14 42 35.11	—15 24 49.42
May	16 . .	35.06	. .
June	17 . .	(34.87)	. .

β Ursæ Minoris.

April	11 . .	14 51 11.51	+74 46 9.05
July	4 . .	12.08	2.43

β Libræ.

April	10 . .	15 8 56.44	— 8 49 35.56
	18 . .	56.27	. .
	20 . .	56.46	34.96
May	16 . .	56.56	. .
	17 . .	(57.04)	. .
June	7 . .	(56.06)	32.61
	13 . .	56.54	31.49
	15 . .	56.53	31.89
	26 . .	56.23	30.20
July	4 . .	56.27	(38.13)
Aug.	5 . .	56.40	33.49

Lalande, 28320.

April	2 . .	15 25 (41.23)	—12 43 15.05
	4 . .	42.61	11.76
	18 . .	42.28	(6.62)
	20 . .	42.64	13.98

α Coronæ Borealis.

April	30 . .	15 28 20.49	+27 13 19.65
May	16 . .	20.25	18.84
June	3 . .	20.36	18.71
	7 . .	20.34	22.31
	13 . .	20.30	. .
	15 . .	20.42	22.34

α Coronæ Borealis—(Continued.)

		Æ	D
		h. m. s.	° ′
June	26 . .	15 28 20.41	+27 13
July	4 . .	20.32	
Aug.	26 . .	20.48	
Dec.	23 . .	20.62	

α Serpentis.

April	10 . .	15 36 53.18	+ 6 54
	30 . .	52.96	
May	16 . .	(52.49)	
June	7 . .	53.09	
	15 . .	52.85	
	20 . .	53.16	
July	4 . .	53.01	
Aug.	5 . .	52.74	
	21 . .		
	24 . .	52.92	
	26 . .	52.97	

Weisse XV, 789.

April	2 . .	15 41 12.25	—14 4
	4 . .	11.62	
	20 . .	11.44	

ζ Ursæ Minoris.

May	4 . .	15 49 31.20
June	15 . .	31.39
	26 . .	32.27
July	16 . .	32.07

β¹ Scorpii.

April	4 . .	15 56 43.18	—19 23
June	7 . .	43.12	
	15 . .	43.35	
	26 . .	42.83	
July	4 . .	43.20	
Aug.	21 . .	43.41	
	24 . .	43.30	
	26 . .	43.16	

Scorpii, 5351.

April	18 . .	15 59 16.59	—19 20
	20 . .	16.76	

δ Ophiuchi.

April	30 . .	16 6 29.10	— 3 18
May	4 . .	29.13	
June	15 . .	29.50	
	26 . .	29.35	
July	4 . .	29.52	
	18 . .	(28.35)	
Aug.	11 . .	29.37	
	21 . .	29.66	
	26 . .	29.13	

Weisse XVI, 173.

			Æ	Dec.
			h. m. s.	° ′ ″
1	10	. .	16 9 27.78	−12 59 45.58
	20	. .	27.30	52.70
	16	. .	26.87	53.65

Weisse XVI, 176.

1	10	. .	16 9 36.78	−13 4 11.86
	20	. .	36.61	7.94
	16	. .	36.0	15.22

α Scorpii.

	4	. .	16 20 12.71	−26 5 33.66
	6	. .	12.74	. .
	26	. .	12.86	. .
	1	. .	(12.21)	. .
	4	. .	12.81	. .
	16	. .	12.87	. .
	10	. .	12.76	40.38
	11	. .	12.67	37.31
	24	. .	12.95	40.56
	26	. .	12.66	39.54
	28	. .	12.88	. .
	17	. .	12.69	42.27
	16	. .	12.77	38.74

η Draconis.

	18	. .	16 21 58.00	+61 51 17.84

Weisse XVI, 1033.

	11	. .	16 54 18.57	− 9 3 39.08

ε Ursæ Minoris.

	20	. .	17 1 30.99	+82 16 30.74
	28	. .	32.30	28.37

Weisse, XVII, 83.

	11	. .	17 5 24.63	− 9 6 1.76

α Herculis.

	4	. .	17 7 48.95	+14 33 . .
	1	. .	48.46	. .
	14	. .	48.55	. .
	6	. .	48.38	57.41
	14	. .	48.62	56.77
	17	. .	48.63	54.61
	21	. .	48.60	54.18

β Draconis.

1	30	. .	17 27 2.48	+52 24 . .
	6	. .	2.76	51.63
	3	. .	2.74	47.23
	7	. .	2.54	. .

α Ophiuchi.

			Æ	Dec.
			h. m. s.	° ′ ″
April	20	. .	17 27 58.37	+12 40 23.29
July	1	. .	58.22	. .
Aug.	28	. .	58.44	. .
Sept.	3	. .	(57.88)	26.89
	6	. .	58.25	23.12
	14	. .	58.45	25.30
	16	. .	58.32	27.03
	17	. .	58.33	23.89
	21	. .	58.42	23.16
	29	. .	58.29	27.49

γ Draconis.

April	20	. .	17 53 7.24	+51 30 30.50
May	16	. .	7.61	26.77
June	6	. .	7.86	29.20
July	23	. .	(8.41)	. .
Sept.	6	. .	7.68	26.73
	14	. .	7.45	30.18
	16	. .	7.48	28.13
	17	. .	7.53	28.66
	21	. .	7.51	27.02
	29	. .	7.60	31.20

μ^1 Sagittarii.

April	20	. .	18 4 47.35	−21 5 37.79
May	16	. .	47.30	. .
Aug.	2	. .	47.43	35.59
	5	. .	47.38	34.30
	10	. .	47.73	36.54
Sept.	3	. .	47.24	31.72
	14	. .	47.31	32.21
	15	. .	47.38	34.09
	17	. .	47.31	35.18
	21	. .	47.22	36.77

δ Ursæ Minoris.

June	6	. .	18 20 44.09	+86 35 47.21
July	27	. .	(37.36)	. .
Aug.	10	. .	41.23	52.89
	11	. .	43.98	48.93
	19	. .	45.13	46.53
	20	. .	(47.34)	. .
	29	. .	45.71	45.31
Sept.	15	. .	42.25	48.15
	17	. .	42.94	. .
	21	. .	42.85	. .
	22	. .	43.74	47.93

δ Ursæ Minoris, S. P.

Dec.	28	. .	18 20 40.29	. .

Lyræ, 6349.

			Æ	Dec.
			h. m. s.	° ′ ″
April	11	. .	18 30 20.73	

α Lyræ.

Jan.	5	. .	18 31 51.76	+38 38 48.77
	21	. .	51.71	51.19
	22	. .	(52.05)	52.88
April	7	. .	51.55	. .
	9	. .	51.64	. .
	15	. .	51.50	. .
	18	. .	51.63	(45.65)
	20	. .	51.48	49.35
	22	. .	51.76	49.89
May	16	. .	51.48	. .
June	6	. .	51.58	. .
July	3	. .	51.44	50.41
	7	. .	51.74	. .
	14	. .	51.35	49.91
Aug.	2	. .	51.62	49.85
	5	. .	51.47	47.98
	10	. .	51.35	49.19
	20	. .	51.78	50.92
	26	. .	51.82	. .
	29	. .	51.29	(45.15)
Sept.	3	. .	51.77	49.30
	6	. .	51.38	46.29
	10	. .	51.61	. .
	13	. .	51.45	49.11
	15	. .	51.56	48.25
	16	. .	51.45	50.50
	17	. .	51.68	49.89
	21	. .	51.61	47.76
	27	. .	51.20	47.41
	29	. .	51.71	47.51
Oct.	14	. .	51.76	46.84
	16	. .	51.61	48.93
	18	. .	51.71	45.76
	19	. .	51.67	51.86
	20	. .	51.67	51.04
Nov.	6	. .	51.68	. .
	27	. .	51.37	48.51
	29	. .	51.63	45.33
Dec.	6	. .	51.91	49.40
	8	. .	51.68	49.69
	18	. .	51.79	49.91
	23	. .	52.04	49.30
	24	. .	51.49	48.44

β Lyræ.

April	18	. .	18 44 32.56	. .
	20	. .	32.14	+33 11 29.14
	25	. .	(31.99)	. .
May	16	. .	32.80	29.75
July	3	. .	32.59	29.59

					31.98	
					28.97	
					26.76	
					32.63	
					29.58	

				31.10	+13 38	39.88
				31.13		. .
				30.74		38.82
				30.69		. .
				30.83		44.65
				30.87		(47.76)
				30.94		41.24
				30.93		38.25
				30.97		41.46
		10	. .	30.80		39.76
		19	. .	30.88		37.90
		20	. .	30.92		37.18
		25	. .	30.79		43.74
		26	. .	30.95		40.52
Sept.		29	. .	30.75		42.23
		30	. .	30.61		38.56
		16	. .	30.79		41.02
		17	. .	30.81		37.36
		19	. .	30.86		42.92
		20	. .	30.87		39.74

δ Aquilæ.

April	22	. .	19 17	55.99	+ 2 49	12.27
	25	. .		56.06		. .
July	3	. .		55.88		12.32
	14	. .		56.09		. .
	16	. .		(56.32)		. .
	23	. .		55.79		. .
	27	. .		56.08		13.18

ε Aquilæ—(Continued.)

			55.93	+ 2 49	9.98
			56.06		10.59
			55.99		7.84
			55.81		10.47
			55.88		10.32
			55.54		11.90
			55.78		7.37
Sept.	3	. .	56.01		15.67
	10	. .	(55.57)		. .
	29	. .	55.97		9.24
Oct.	18	. .	55.95		8.31
	20	. .	55.91		7.33
	27	. .	56.01		10.90
	29	. .	55.89		11.55

γ Aquilæ.

April	22	. .	19 39	7.85	+10 15	4.72
May	16	. .		7.44		. .
June	11	. .		7.63		. .
July	3	. .		7.43		6.60
	4	. .		7.50		. .
	14	. .		7.65		. .
	16	. .		7.61		. .
	23	. .		(6.78)		. .
	27	. .		7.75		7.68
	29	. .		7.67		4.02
Aug.	10	. .		7.75		5.05
	11	. .		7.72		3.47
	18	. .		7.69		7.16
	19	. .		7.71		3.98
	20	. .		7.51		3.02
	25	. .		7.84		(9.06)
Sept.	4	. .		7.78		. .
	10	. .		7.50		8.06
	13	. .		7.64		. .
	15	. .		7.72		5.87
	21	. .		7.60		. .
	27	. .		7.64		6.15
Oct.	16	. .		7.60		5.19
	19	. .		7.55		9.07
	20	. .		7.32		. .
	27	. .		7.57		4.63
	29	. .		7.70		4.95
Nov.	2	. .		7.75		5.19

α Aquilæ.

Feb.	12	. .	19 43	(28.13)	+ 8 28	35.30
	25	. .		27.94		. .
May	16	. .		27.61		31.09
June	11	. .		27.65		. .
July	3	. .		27.92		34.55
	29	. .		27.82		34.78
Aug.	10	. .		27.56		. .

α Aquilæ—(Continued.

			h. m. s.	
Aug.	11	. .	19 43 27.97	+
	18	. .	27.61	
	19	. .	27.74	
	20	. .	27.64	
Sept.	3	. .	27.57	
	13	. .	27.76	
	21	. .	27.16	
Oct.	16	. .	27.66	
	18	. .	28.09	
	19	. .	27.70	
	20	. .	27.81	
	26	. .	28.18	
	27	. .	27.74	
Nov.	2	. .	27.99	
	4	. .	27.72	
	6	. .	27.84	
Dec.	6	. .	27.80	
	23	. .	(28.24)	
	24	. .	27.47	

Aquilæ, 6825.

Sept.	15	. .	19 46 58.66	+

β Aquilæ.

June	11	. .	19 47 56.75	+
July	4	. .	56.76	
	27	. .	56.62	
Aug.	18	. .	56.54	
	19	. .	56.54	
Sept.	13	. .	56.69	
	21	. .	56.55	
Oct.	16	. .	56.52	
	19	. .	56.60	
Aug.	20	. .	56.51	
	29	. .	56.67	
Nov.	2	. .	56.72	
	4	. .	56.69	
	6	. .	56.41	

Anonymous.

Sept.	19	. .	19 49 3.44	—14

Weisse XIX, 1259.

Sept.	29	. .	19 49 37.12	—14

Weisse XIX, 1319.

Sept.	29	. .	19 52 41.14	—14
Oct.	11	. .	40.63	

Anonymous.

Oct.	11	. .	20 2 53.13	—14

Anonymous.

		Æ h. m. s.	Dec. ° ′ ″
st.	18 . .	20 5 45.84	—14 16 . .

a^1 Capricorni.

uly	23 . .	20 9 18.70	

a^2 Capricorni.

uly	3 . .	20 9 43.41	—13 0 20.46
	4 . .	43.35	18.87
	27 . .	43.58	18.87
ug.	10 . .	(43.06)	18.73
	18 . .	43.30	21.88
	19 . .	43.31	20.45
	25 . .	43.24	. .
pt.	1 . .	43.41	(15.52)
	3 . .	43.65	19.72
	4 . .	43.62	21.11
	10 . .	43.58	20.03
	27 . .	43.42	17.94
ov.	2 . .	43.62	. .

Weisse XX, 268.

st.	26 . .	20 11 23.73	—13 55 10.07
	27 . .	23.65	10.54

λ Ursæ Minoris.

ug.	5 . .	20 12 59.88	+88 51 32.26

λ Ursæ Minoris, S. P.

pril	9 . .	20 12 57.46	+88 51 39.35

Weisse XX, 387.

st.	25 . .	20 15 45.44	—13 52 25.33
	26 . .	45.74	29.43
	27 . .	45.45	28.71

Weisse XX, 545.

ov.	2 . .	20 21 56.28	—13 31 27.56

Weisse XX, 779.

ov.	4 . .	20 30 30.58	—13 10 44.14

a Cygni.

g.	5 . .	20 36 19.35	+44 44 46.18
	9 . .	18.81	46.71
	12 . .	19.14	(41.50)
ch.	5 . .	(19.50)	47.94
ar.	4 . .	19.29	45.98
	28 . .	19.07	50.31
ril	15 . .	19.09	. .
y	27 . .	18.85	. .
y.	25 . .	19.28	51.52

a Cygni, (Continued.)

		Æ h. m. s.	Dec. ° ′ ″
Aug.	29 . .	20 36 19.28	+44 44 43.99
Sept.	10 . .	19.21	47.19
Oct.	1 . .	(19.39)	46.46
	11 . .	19.30	. .
Nov.	5 . .	18.87	47.75
Dec.	18 . .	19.49	47.32
	24 . .	19.42	47.84

61^1 Cygni.

July	27 . .	21 0 10.65	+38 0 . .
Aug.	5 . .	10.47	52.40
	18 . .	10.76	50.92
	19 . .	10.79	49.79
	29 . .	10.89	50.99
Sept.	3 . .	10.93	. .
Oct.	11 . .	10.66	. .
	18 . .	(11.15)	. .
Nov.	11 . .	10.22	50.91

ζ Cygni.

July	4 . .	21 6 33.42	+29 36 50.44
	14 . .	33.16	. .
Aug.	18 . .	33.38	45.38
	19 . .	33.26	51.21
	25 . .	33.57	53.40
Sept.	1 . .	33.41	51.29
	29 . .	33.17	49.61
Oct.	1 . .	33.05	(45.26)

a Cephei.

July	27 . .	21 14 60.16	+61 57 4.20
Aug.	12 . .	59.95	2.81
	18 . .	60.03	2.65
	19 . .	60.11	4.49
	29 . .	60.33	3.03
Sept.	3 . .	60.38	4.20
Oct.	14 . .	60.07	3.35
Nov.	29 . .	59.54	2.62

β Aquarii.

July	14 . .	21 23 (39.10)	—6 13 36.89
	29 . .	39.38	40.84
Aug.	5 . .	39.56	42.08
	29 . .	39.46	40.88
Sept.	1 . .	39.52	38.70
	10 . .	39.70	. .
	29 . .	39.38	42.45
Oct.	1 . .	39.25	48.63

β Cephei.

Aug.	12 . .	21 26 42.12	+69 54 6.10
	19 . .	42.75	8.46
	25 . .	42.48	11.46
Oct.	14 . .	42.66	8.47

β Cephei, (Continued.)

		Æ h. m. s.	Dec. ° ′ ″
Nov.	11 . .	21 26 41.98	+69 54 6.81
	27 . .	42.16	10.87
	9 . .	42.00	8.50

ε Pegasi.

July	27 . .	21 36 49.26	+9 11 24.87
	29 . .	49.36	24.96
Aug.	5 . .	49.32	21.12
	12 . .	48.82	18.31
	18 . .	49.11	21.59
	29 . .	48.95	20.73
Sept.	10 . .	49.36	26.48
	22 . .	49.05	21.92
	27 . .	49.23	22.31
	28 . .	49.27	22.31
Oct.	11 . .	(48.68)	24.33
	14 . .	49.12	24.57
	16 . .	48.85	23.23
	27 . .	49.14	23.79
	29 . .	48.87	22.27
Nov.	27 . .	49.54	21.75
	29 . .	49.00	22.11

a Aquarii.

July	4 . .	21 58 4.64	—1 2 45.27
Aug.	5 . .	4.84	46.43
	12 . .	4.40	48.11
Oct.	14 . .	4.66	47.37
	27 . .	4.66	. .
Nov.	27 . .	4.76	47.34
		4.63	45.72

a Gruis.

July	29 . .	21 58 45.06	—47 41 3.81

Weisse XXI, 1398.

Sept.	26 . .	22 0 31.25	— 12 20 . .
Nov.	11 . .	31.89	40.80

Aquarii, 7722.

Aug.	18 . .	22 2 35.79	—12 17 61.18
	19 . .	35.99	61.63
	25 . .	35.95	. .
	26 . .	35.80	. .
	29 . .	35.67	60.83
Sept.	1 . .	35.71	57.21
	3 . .	35.96	. .
	4 . .	36.19	57.57
	10 . .	36.07	58.67

Weisse XXII, 175.

Aug.	5 . .	22 8 45.80	—12 23 37.46

Groombridge, 3820, S. P.

			Æ	Dec.
			h. m. s.	° ′ ″
March	4	. .	22 24 29.99	+85 21 5.26

ζ Pegasi.

Aug.	12	. .	22 33 58.83	+10 2 58.68
	18	. .	58.94	58.51
	29	. .	58.86	60.90
	30	. .	58.80	. .
Sept.	1	. .	58.80	62.63
	4	. .	58.84	59.04
	26	. .	(59.27)	62.03
Oct.	14	. .	58.80	. .
	27	. .	58.97	. .
Nov.	3	. .	58.87	62.24

λ Aquarii.

Aug.	25	. .	22 44 47.30	−8 22 30.71

α Piscis Australis.

			Æ	Dec.
			h. m. s.	° ′ ″
Sept.	15	. .	22 49 20.89	−30 24 57.41
	26	. .	20.84	58.20
	28	. .	20.83	. .
Oct.	16	. .	21.11	(51.31)
	20	. .	20.95	. .
	27	. .	20.64	58.93
	29	. .	20.81	58.30
Nov.	3	. .	20.73	59.15
	17	. .	21.24	53.26

α Pegasi.

April	7	. .	22 57 17.62	+14 23 57.83
Aug.	30	. .	17.46	. .
Sept.	1	. .	17.63	60.59
	10	. .	17.68	63.65
	26	. .	(17.22)	59.92
Oct.	14	. .	17.45	56.69
	21	. .	17.55	57.55
	22	. .	17.52	56.94
	27	. .	17.51	. .

α Pegasi, (Continued.)

			Æ	De
			h. m. s.	° ′
Nov.	5	. .	22 57 17.61	+14 23
Nov.	29	. .	17.45	
Dec.	18	. .	17.24	

Groombridge, 4101, S. P.

March	5	. .	23 27 49.99	+86 28

ι Piscium.

Aug.	30	. .	23 32 14.24	+4 4
Sept.	1	. .	14.15	
Oct.	21	. .	14.07	
Nov.	3	. .	14.37	
	5	. .	13.96	
	11	. .	14.07	
	30	. .	14.23	

γ Cephei.

Sept.	3	. .	23 33 14.85	+76 47

λ Piscium.

Aug.	26	. .	23 34 23.92	+0 57

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1847.

NATIONAL OBSERVATORY.

Bessel Z. 387 = Lalande, 47307.

		h.	m.	s.	°	′	″
Nov.	29	0	0	7.57	37	53	15.12

α Andromedæ.

		h.	m.	s.	°	′	″
Jan.	6	0	0	38.36	28	15	46.07
	8			38.63			45.79
Oct.	4			38.77			42.09
	25			38.75			44.05
Nov.	5			38.51			42.95

σ Andromedæ.

		h.	m.	s.	°	′	″
Oct.	25	0	10	30.22	35	57	12.71

ρ Andromedæ.

		h.	m.	s.	°	′	″
Oct.	26	0	13	14.04	37	8	13.96
Nov.	5			14.06			14.70

Lalande, 421.

		h.	m.	s.	°	′	″
Aug.	11	0	15	3.59	37	55	18.92
	18			3.20			18.61
Sept.	3			3.34			19.03

Anonymous.

		h.	m.	s.	°	′	″
Oct.	26	0	20	59.93	36	4	11.05

Lalande, 656.

		h.	m.	s.	°	′	″
Oct.	25	0	21	53.87	37	29	52.65

Lalande, 713.

		h.	m.	s.	°	′	″
Oct.	4	0	23	24.63	38	9	5.59

Lalande, 762.

		h.	m.	s.	°	′	″
Oct.	29	0	24	42.90	38	0	58.20

Bessel Z. 386 = Lalande, 849.

		h.	m.	s.	°	′	″
Nov.	29	0	27	8.91	36	0	17.77

Lalande, 884.

		h.	m.	s.	°	′	″
Oct.	29	0	28	3.89	37	25	32.24

B. A. C. 158.

		h.	m.	s.	°	′	″
Oct.	29	0	29	20.13	34	34	25.20

δ Andromedæ.

		h.	m.	s.	°	′	″
Jan.	6	0	31	18.75	30	2	23.68
	8			19.05			23.60

Rumker Sup. 361 = Lalande, 1444.

		h.	m.	s.	°	′	″
Dec.	6	0	44	43.39	38	13	15.04

Bessel Z. 387 = Lalande, 1492.

		h.	m.	s.	°	′	″
Oct.	4	0	46	1.08	38	15	9.54
	9			1.03			10.59
Dec.	15			0.91			10.10

Bessel Z. 387 = Lalande, 1504.

		h.	m.	s.	°	′	″
Nov.	29	0	46	22.35	38	21	17.68

μ Andromedæ.

		h.	m.	s.	°	′	″
Oct.	9	0	48	26.66	37	41	4.23

Lalande, 1627.

		h.	m.	s.	°	′	″
Oct.	18	0	49	46.04	36	41	15.02
	26			46.65			15.63
	28			46.60			15.53
Dec.	15			46.13			15.25

Lalande, 1702.

		h.	m.	s.	°	′	″
Nov.	11	0	52	4.29	34	52	51.16

Lalande, 2027.

		h.	m.	s.	°	′	″
Sept.	3	1	1	20.21	37	19	25.27

β Andromedæ.

		h.	m.	s.	°	′	″
Oct.	25	1	1	20.93	34	49	26.90
Nov.	11			21.07			28.04

B. A. C. 343.

		h.	m.	s.	°	′	″
Nov.	11	1	2	45.37	36	55	29.11
Dec.	6			45.31			28.47

Lalande, 2330.

		h.	m.	s.	°	′	″
Sept.	3	1	10	18.05	36	35	42.53
Oct.	25			17.94			42.71
Dec.	15			17.74			42.24

Bessel Z. 387 = Lalande, 2936.

		h.	m.	s.	°	′	″
Dec.	15	1	28	48.56	37	44	55.15

Lalande, 3025.

		h.	m.	s.	°	′	″
Nov.	29	1	31	18.35	38	12	25.86

Anonymous.

		h.	m.	s.	°	′	″
Nov.	11	1	32	14.69	37	30	14.33

B. A. C. 516.

		h.	m.	s.	°	′	″
Oct.	25	1	33	24.08	34	29	11.39

Anonymous.

		h.	m.	s.	°	′	″
Oct.	4	1	38	1.32	37	59	47.88

B. A. C. 576.

		h.	m.	s.	°	′	″
Oct.	25	1	46	6.95	36	23	20.66

α Arietis.

		h.	m.	s.	°	′
Jan.	8	1	58	43.72	22	44
Feb.	6			43.88		
March	5			44.08		
Nov.	11			43.67		
	29			43.67		

β Trianguli.

		h.	m.	s.	°	′
Oct.	18	2	0	37.67	34	16
	25			38.06		

B. A. C. 661.

		h.	m.	s.	°	′
Jan.	14	2	1	47.89	38	19

B. A. C. 662.

		h.	m.	s.	°	′
Jan.	14	2	1	48.75	38	19

γ Trianguli.

		h.	m.	s.	°	′
Oct.	18	2	8	24.15	33	9
	25			24.53		
Nov.	11			24.65		

B. A. C. 772.

		h.	m.	s.	°	′
Dec.	6	2	22	57.48	35	28

Lalande, 4667.

		h.	m.	s.	°	′
Oct.	4	2	23	43.54	36	40
	18			42.90		
	25			43.34		
Dec.	6			43.16		

Lalande, 4761.

		h.	m.	s.	°	′
Dec.	6	2	26	42.67	36	23

Lalande, 5112.

		h.	m.	s.	°	′
Jan.	6	2	38	6.21	37	9

Lalande, 5181.

		h.	m.	s.	°	′
Dec.	6	2	40	15.67	36	10

B. A. C. 877.

		h.	m.	s.	°	′
Oct.	25	2	42	17.30	34	26

B. A. C. 888.

		h.	m.	s.	°	′
Jan.	14	2	44	15.41	37	43

Anonymous.

		h.	m.	s.	°	′
Jan.	8	2	48	32.49	38	0

Anonymous.

		h.	m.	s.	°	′
Nov.	29	2	49	16.66	38	11
Dec.	6			16.43		

B. A. C. 915.

		h. m. s.	° ′ ″
t.	25 . .	2 49 46.87	34 34 42.24

ρ Persei.

n.	5 . .	2 55 34.85	38 15 19.28
	6 . .	34.86	19.40
ec.	15 . .	34.79	18.04

Anonymous.

n.	14 . .	3 0 28.90	36 42 1.75

Lalande, 6532.

n.	14 . .	3 25 18.80	38 4 45.81

B. A. C. 1123.

n.	14 . .	3 31 22.78	37 5 29.81

Lalande, 6820.

n.	14 . .	3 34 49.70	35 58 56.07

Lalande, 7003.

n.	5 . .	3 40 12.84	37 24 45.77
	8 . .	12.76	45.01
eb.	1 . .	12.95	45.27

Lalande, 7206.

n.	5 . .	3 46 49.37	34 38 16.26

ξ Persei.

n.	5 . .	3 49 14.55	35 21 18.74
	8 . .	14.53	18.36
	14 . .	14.61	19.56

Anonymous.

n.	14 . .	3 51 25.32	36 33 38.87

B. A. C. 1269.

n.	8 . .	3 58 37.31	37 38 31.71

Lalande, 7994.

n.	8 . .	4 9 30.10	37 37 40.84

B. A. C. 1349.

c.	15 . .	4 14 45.55	33 46 39.94

Lalande, 8455.

c.	6 . .	4 22 17.88	36 42 54.18
	15 . .	17.68	52.06

α Tauri.

arch	5 . .	4 27 19.30	16 12 16.57

B. A. C. 1476.

		h. m. s.	° ′ ″
Jan.	14 . .	4 39 49.08	37 13 4.98
Feb.	1 . .	49.08	4.85

B. A. C. 1492.

Jan.	14 . .	4 42 35.96	36 26 39.90
Feb.	1 . .	35.94	39.20

μ Aurigæ.

Feb.	4 . .	5 3 10.07	38 18 4.31

Lalande, 10666.

Feb.	14 . .	5 32 29.86	38 7 2.02

Lalande, 10871.

Feb.	6 . .	5 37 54.96	35 5 51.28

υ Aurigæ.

Feb.	6 . .	5 40 48.70	37 15 24.29
	14 . .	48.76	23.90

ϑ Aurigæ.

Jan.	27 . .	5 49 29.67	37 11 47.38
Feb.	4 . .	29.64	46.90
	6 . .	29.44	47.34
	14 . .	29.59	47.39

Anonymous.

Jan.	27 . .	5 51 28 29	36 30 14.25

Anonymous.

Jan.	27 . .	5 51 28.75	36 30 6.97

B. A. C. 1935.

Jan.	27 . .	5 54 45.16	37 57 52.36
March	5 . .	45.34	53.52
	6 . .	. . .	53.06

Lalande, 11471.

Feb.	4 . .	5 56 7.05	35 24 18.06
	6 . .	6.83	17.48
	14 . .	7.06	17.89

B. A. C. 1947.

Feb.	6 . .	5 57 13.35	38 5 30.76

Lalande, 12173.

March	5 . .	6 15 25.30	38 7 28.43
	6 . .	. . .	27.97

B. A. C. 2110.

Feb.	6 . .	6 22 40.00	32 33 22.76

Lalande, 12503.

		h. m. s.	° ′ ″
March	10 . .	6 24 22	38 38 53.06

Lalande, 12805.

Jan.	27 . .	6 33 1.93	32 41 49.37

Lalande, 12798.

Feb.	23 . .	6 33 2.30	37 17 15.02

Lalande, 12849.

Feb.	6 . .	6 34 7.16	36 15 6.43

ϑ Geminorum.

March	5 . .	6 42 53.89	34 8 14.45

B. A. C. 2270.

Feb.	14 . .	6 48 49.26	38 15 9.42
	23 . .	49.22	10.42

Lalande, 13569.

Feb.	6 . .	6 53 59.39	36 31 37.63
	14 . .	59.50	37.66

Lalande, 13601.

Jan.	27 . .	6 54 45.75	35 44 51.70
March	5 . .	45.37	53.53

B. A. C. 2416.

Jan.	27 . .	7 12 0.87	37 2 14.58
Feb.	23 . .	1.03	15.79
March	5 . .	0.31	16.23

ρ Geminorum.

Feb.	23 . .	7 19 27.60	32 4 40.21
March	5 . .	27.23	42.88

Lalande, 14484.

Feb.	23 . .	7 20 1.18	38 28 33.07
March	5 . .	0.79	32.56

a^2 Geminorum.

Feb.	23 . .	7 25 1.42	32 12 45.39

B. A. C. 2504.

Feb.	23 . .	7 28 41.74	35 22 47.26

Lalande, 14865.

March	20 . .	7 30 8	38 40 57.68
	22 . .	. . .	55.96

Lalande, 15196.

Jan.	27 . .	7 41 18.04	37 27 25.57
Feb.	23 . .	18.25	26.63

LALANDE, 15235.

	h. m. s.	° ′ ″
Feb. 23 . .	7 42 21.91	36 38 53.85
March 5 . .	21.29	54.72

LALANDE, 16413.

March 5 . .	8 15 27.71	35 29 34.27

B. A. C. 2855.

Mar. 31 . .	8 23 0.28	38 31 36.31
April 3 . .	0.32	36.09

LALANDE, 17182.

March 18 . .	8 36 0	37 50 1.02
20 . .	. . .	1.03

LALANDE, 17605.

March 22 . .	8 48 11	38 50 5.63

LALANDE, 18288.

March 31 . .	9 9 10.59	35 59 26.01
April 3 . .	10.76	26.52

B. A. C. 3162.

March 24 . .	9 9 29.91	37 26 2.36
31 . .	29.74	2.59
April 3 . .	30.06	2.87

LALANDE, 18362.

March 24 . .	9 11 33	38 49 12.11

α LYNCIS.

March 31 . .	9 11 54.59	35 1 25.36

B. A. C. 3261.

March 24 . .	9 25 1.22	37 3 38.16
31 . .	1.13	38.01

B. A. C. 3364.

April 3 . .	9 43 15.03	38 36 56.34
18 . .	15.11	56.94

B. A. C. 3446.

March 24 . .	9 58 34.25	35 58 25.06
31 . .	34.27	25.16

LALANDE, 20169.

April 13 . .	10 16 47.97	36 57 51.95
16 . .	47.85	51.93

β LEONIS MINORIS.

April 13 . .	10 19 11.74	37 28 26.33
14 . .	12.11	26.86

B. A. C. 3625.

	h. m. s.	° ′ ″
April 21 . .	10 27 44.26	37 6 10.99
22 . .	44.42	11.18

ANONYMOUS.

April 18 . .	10 29 21.39	34 8 23.28

LALANDE, 20783.

March 24 . .	10 39 51.75	38 21 36.87
31 . .	52.14	37.37

B. A. C. 3736.

April 16 . .	10 46 37.25	34 50 3.13
18 . .	37.33	3.11

B. A. C. 3741.

April 16 . .	10 47 25.35	34 18 23.63
18 . .	25.41	23.12

LALANDE, 21081.

April 14 . .	10 51 10.18	36 53 51.20

ANONYMOUS.

April 13 . .	10 59 19.27	37 35 47.51
14 . .	19.42	47.61

B. A. C., 3811.

April 21 . .	11 1 3.51	37 7 19.73
22 . .	3.48	19.96

LALANDE, 21418.

April 14 . .	11 4 22.35	36 38 5.11
16 . .	22.03	5.24

LALANDE, 21421.

April 14 . .	11 4 31.93	36 38 42.03
16 . .	31.65	41.63

ANONYMOUS.

May 5 . .	11 19 39.57	32 32 1.55

LALANDE, 21902.

April 14 . .	11 24 11.49	37 4 32.91

LALANDE, 21947.

April 22 . .	11 25 57.14	37 38 46.51
25 . .	57.08	44.87

LALANDE, 22059.

April 22 . .	11 30 36.78	34 27 24.41
25 . .	36.77	23.74

B. A. C. 3965.

	h. m. s.	° ′ ″
April 22 . .	11 33 8.58	35 2 55.77
25 . .	8.55	54.72

LALANDE, 22357.

April 22 . .	11 43 17.31	37 40 11.00
25 . .	17.45	9.50

B A. C., 4010.

April 21 . .	11 44 19	38 47 41.01
22 . .	. . .	41.07

LALANDE, 22450.

April 14 . .	11 47 28.59	37 35 34.68

LALANDE, 22485.

April 14 . .	11 48 33.04	36 16 56.90
22 . .	32.85	58.98
25 . .	32.69	56.95

LALANDE, 22548.

April 25 . .	11 51 4.03	33 58 59.83

LALANDE, 22574.

April 25 . .	11 52 26.84	37 33 52.87
May 4 . .	26.67	54.61

LALANDE, 22577.

April 25 . .	11 52 34.02	37 34 7.40
May 4 . .	34.00	8.47

LALANDE, 22612.

April 14 . .	11 53 58.75	36 52 50.04
22 . .	58.19	51.84
25 . .	58.12	50.19

LALANDE, 22934.

April 25 . .	12 6 33.05	33 37 8.98

LALANDE, 22934, a.

April 25 . .	12 6 35.30	33 37 7.87

B. A. C. 4128.

April 22 . .	12 8 57.34	33 54 1.20

LALANDE, 23117.

May 20 . .	12 12 44	38 44 8.94

LALANDE, 23269.

May 4 . .	12 18 58.64	37 56 41.19
6 . .	58.75	41.58

LALANDE, 23537.

May 4 . .	12 27 50.77	37 15 12.11
6 . .	50.99	11.74

B. A. C. 4552.

		h.	m.	s.	°	′	″
il	25 . .	12	30	47.62	37	3	32.36

LALANDE, 23653.

il	22 . .	12	31	58.55	36	46	39.53
	25 . .			59.13			37.67

LALANDE, 23666.

r	4 . .	12	32	50.89	34	59	26.61
	6 . .			50.26			26.99

LALANDE, 23711.

r	6 . .	12	35	2.74	34	31	1.14

LALANDE, 23896.

il	14 . .	12	41	19.01	37	9	42.43

LALANDE, 23919.

r	6 . .	12	42	3.89	36	8	26.85

B. A. C. 4311.

r	5 . .	12	43	2.38	38	20	3.37

LALANDE, 24271.

r	20 . .	12	55	21	38	9	19.93

B. A. C. 4384.

il	25 . .	12	58	43.32	36	36	9.37

B. A. C. 4407.

y	6 . .	13	2	42.92	38	13	26.44
	29 . .			43.69			27.58

LALANDE, 24579.

r	4 . .	13	6	40.83	37	41	4.33
	6 . .			40.96			4.07

LALANDE, 24615.

·	6 . .	13	8	12.79	36	14	26.51

ANONYMOUS.

·	6 . .	13	10	18.73	33	17	2.88

B. A. C. 4536.

·	4 . .	13	28	5.30	37	57	10.51
	29 . .			5.84			11.03

B. A. C. 4552.

·	4 . .	13	30	47.44	37	3	33.71

ANONYMOUS.

May	4 . .	13	36	2.06	35	44	48.75
	6 . .			2.19			47.95

B. A. C. 4632.

May	18 . .	13	45	10.31	35	11	23.01

LALANDE, 25625.

May	18 . .	13	48	9.07	37	48	33.26
	28 . .			8.74			35.21

LALANDE, 25860.

May	18 . .	13	58	3.26	35	8	37.65
	29 . .			3.65			39.39

LALANDE, 26013.

May	28 . .	14	3	25.54	38	2	26.74
	29 . .			25.51			27.86

B. A. C. 4714.

May	18 . .	14	4	42.60	33	0	11.23

α BOOTIS.

Aug.	26 . .	14	8	49.17	19	57	57.80
	31 . .			. . .			57.88
Sept.	3 . .			49.32			58.30
	6 . .			49.44			56.22
	13 . .			49.30			58.01
	17 . .			. . .			59.37

ANONYMOUS.

June	9 . .	14	10	22.54	38	26	57.70

B. A. C. 4778.

May	29 . .	14	17	16.00	37	53	18.23

B. A. C. 4797.

May	18 . .	14	22	3.43	36	52	13.22
	29 . .			3.92			14.48

ε BOOTIS.

Aug.	20 . .	14	38	26.12	27	42	34.27

LALANDE, 26923.

May	18 . .	14	38	56.99	33	25	36.05

ANONYMOUS.

June	7 . .	14	45		37	20	3.23

B. A. C. 5026.

June	11 . .	15	7	53	38	49	46.44
	15 . .			. . .			44.37

δ BOOTIS.

June	9 . .	15	9	27.46	33	52	40.70

μ^1 BOOTIS.

May	18 . .	15	18	49.50	37	54	20.58
	29 . .			49.67			21.71

μ^2 BOOTIS.

May	18 . .	15	18	50.90	37	52	33.44
	29 . .			51.05			34.41

LALANDE, 28347.

May	18 . .	15	25	40.10	37	7	49.99

α CORONÆ BOREALIS.

Aug.	20 . .	15	28	20.21	27	13	22.21
	26 . .			20.26			23.57
Oct.	16 . .			20.33			22.51

ANONYMOUS.

June	24 . .	15	32	35	38	31	15.96
	25 . .			. . .			16.67

ζ^1 CORONÆ BOREALIS.

June	9 . .	15	33	43.92	37	7	32.70
	11 . .			44.01			32.78

ζ^2 CORONÆ BOREALIS.

June	9 . .	15	33	43.47	37	7	36.60
	11 . .			43.55			36.69

LALANDE, 28641.

June	9 . .	15	34	53.65	37	30	13.17
	11 . .			53.68			13.22

LALANDE, 28799.

June	24 . .	15	40	47	36	55	8.74

LALANDE, 28801.

June	24 . .	15	40	48	36	54	44.27

κ CORONÆ BOREALIS.

June	11 . .	15	45	35.13	36	7	34.13

ζ CORONÆ BOREALIS.

June	9 . .	15	50	20.09	38	23	0.21
	11 . .			20.13			0.38

LALANDE, 29341.

June	9 . .	15	58	32.21	34	35	31.54

τ CORONÆ BOREALIS.

June	9 . .	16	3	29.12	36	51	46.46

B. A. C., 5411.

		h. m. s.	° ′ ″
June	11 . .	16 6 19.21	36 48 55.89

Lalande, 32165.

July	12 . .	17 30 32	37 23 58.04

ϑ Herculis.

July	16 . .	17 51 6.63	37 16 25.51
	23 . .	6.33	25.17
	24 . .	6.63	24.76

α Lyræ.

Jan.	5 . .	18 31 51.35	38 38 49.85
	7 . .	51.65	50.46
July	12 . .	. . .	50.04
	28 . .	. . .	47.38
Aug.	2 . .	. . .	48.42
Dec.	6 . .	51.08	50.34
	18 . .	. . .	48.83

Lalande, 34868.

Aug.	26 . .	18 38 20.68	36 24 20.87

ζ¹ Lyræ.

July	16 . .	18 39 36.33	37 27 5.61

β Lyræ.

Aug.	26 . .	18 44 32.34	33 11 30.78
Oct.	18 . .	32.52	30.16

Lalande, 35222.

Aug.	26 . .	18 47 1.99	36 21 44.40

ι Lyræ.

Aug.	26 . .	19 1 56.80	35 52 5.14

Lalande, 36125.

July	23 . .	19 6 2.95	38 32 20.31
Aug.	2 . .	. .	18.96
	11 . .	3.17	18.87
Sept.	4 . .	2.89	19.21
	6 . .	2.84	19.05

Lalande, 36324.

Aug.	25 . .	19 10 12.86	38 26 50.13
Sept.	10 . .	13.64	51.21

ϑ Lyræ.

July	24 . .	19 11 9.84	37 52 10.46
Aug.	13 . .	9.70	8.77

Lalande, 36478.

Sept.	13 . .	19 13 44.51	37 10 17.50

Anonymous.

Aug.	11 . .	19 15 4.49	36 28 8.65

Lalande, 36732.

Sept.	6 . .	19 19 11.15	36 53 46.27

Lalande, 36774.

Aug.	18 . .	19 19 58.61	36 57 5.42
	25 . .	59.14	4.38

B. A. C. 6667.

Sept.	4 . .	19 20 44.94	36 1 11.61
	6 . .	44.73	11.84
	13 . .	45.53	9.60

β Cygni.

Aug.	26 . .	19 24 40.43	27 38 52.93

Anonymous.

Oct.	1 . .	19 32 54.80	38 32 7.51

Anonymous.

Aug.	19 . .	19 34 11.07	36 43 52.40
	26 . .	11.02	52.27

Lalande, 37597.

Aug.	19 . .	19 38 28.26	37 57 56.92
	26 . .	28.14	56.43

B. A. C. 6771.

Sept.	3 . .	19 38 51.97	36 59 40.98
	10 . .	52.02	41.10

Lalande, 37753.

Sept.	1 . .	19 42 8.48	38 2 20.04
	3 . .	8.55	20.24

Lalande, 38037.

Aug.	26 . .	19 49 20.76	34 30 26.55

B. A. C. 6849.

Sept.	13 . .	19 50 29.99	38 5 27.63

Lalande, 38175.

Sept.	14 . .	19 52 27.22	37 43 8.37
Oct.	4 . .	27.48	9.69

Lalande, 38202.

Aug.	13 . .	19 53 10.05	37 42 4.60

Anonymous.

Aug.	19 . .	19 54 11.43	34 54 8.42

Anonymous.

Aug.	19 . .	19 54 17.89	34 53

Lalande, 38283, s.

Aug.	19 . .	19 55 10.30	36 9
	26 . .	10.21	

Lalande, 38283.

Aug.	19 . .	19 55 12.37	36 10
	26 . .	12.29	
Sept.	16 . .	12.53	

Anonymous.

Aug.	26 . .	19 59 41.18	38 2

Anonymous.

Sept.	16 . .	20 2 51.49	37 41
	29 . .	. . .	

Anonymous.

Sept.	4 . .	20 2 54.35	37 42
	16 . .	54.26	

Lalande, 38859.

Sept.	15 . .	20 7 55.92	38 19

b^2 Cygni.

Oct.	1 . .	20 8 54.94	36 20
	4 . .	54.95	

B. A. C. 6969.

Sept.	16 . .	20 9 3.35	36 17

B. A. C. 6990.

Aug.	13 . .	20 12 15.47	37 34
Sept.	1 . .	15.52	
	3 . .	15.75	

B. A. C. 7001.

Sept.	16 . .	20 13 29.73	38 32

B. A. C. 7006.

Sept.	10 . .	20 14 11.59	36 39
	13 . .	11.51	

B. A. C. 7061.

Aug.	19 . .	20 22 0.79	27 56
	26 . .	0.75	
Sept.	4 . .	0.83	
Oct.	1 . .	0.88	
	4 . .	0.74	

Anonymous.

Sept.	3 . .	25 28 43.35	37 20

Anonymous.

	h.	m.	s.	°	′	″
. 11 . .	20	31	38.03	37	52	52.80

Lalande, 39884.

g. 11 . .	20	31	43.51	37	34	35.14

Anonymous.

t. 14 . .	20	31	43.78	37	45	17.23

Lalande, 39885.

t. 6 . .	20	31	45.29	37	48	34.16
13 . .			45.15			32.05

Anonymous.

. 1 . .	20	32	34.04	38	1	28.24
4 . .			33.49			27.58

Lalande, 39934, *a*.

t. 15 . .	20	32	59.37	38	7	22.19
. 18 . .			60.43			19.58

Lalande, 39934.

t. 15 . .	20	32	59.71	38	7	5.80
. 9 . .			60.04			5.89
16 . .			59.90			5.42
18 . .			59.96			5.73

ε Cygni.

. 9 . .	20	40	8.54	33	24	40.23
18 . .			8.41			40.43

Anonymous.

g. 19 . .	20	41	11.60	33	49	31.13
26 . .			11.56			31.29

λ Cygni.

. 11 . .	20	41	33.95	35	56	30.75
18 . .			33.90			31.32

Lalande, 40277.

t. 16 . .	20	43	17.43	35	0	38.56

Anonymous.

t. 14 . .	20	48	47.95	36	39	53.75

Lalande, 40494.

t. 10 . .	20	48	51.18	36	30	17.46
13 . .			50.65			17.77
16 . .			50.72			17.56

B. A. C. 7320.

. 25 . .	20	57	15.91	38	4	0.46

Anonymous.

Sept. 1 . .	20	57	26.65	37	33	41.04
3 . .			26.54			41.33
13 . .			26.78			40.25

61¹ Cygni.

Oct. 9 . .	21	0	10.58	38	0	52.93
11 . .			10.57			52.52
15 . .			10.75			52.53
16 . .			10.44			52.46
18 . .			10.48			52.41
26 . .			10.54			52.20

61² Cygni.

Oct. 9 . .	21	0	12.38	38	0	49.74
16 . .			11.84			48.83
18 . .			11.88			49.24

Lalande, 41086.

Sept. 6 . .	21	3	16.58	38	7	23.92
10 . .			16.96			22.94

ζ Cygni.

Sept. 3 . .	21	6	33.21	29	36	51.37
6 . .			33.10			49.65
10 . .			33.27			49.66
14 . .			32.80			(45.81)
Oct. 4 . .			33.30			51.44
9 . .			33.14			50.88
15 . .			33.27			51.93
18 . .			33.12			53.42

B. A. C. 7373.

Oct. 9 . .	21	7	24.62	36	0	59.03
15 . .			24.61			58.95
18 . .			24.66			59.48

Lalande, 41269.

Sept. 16 . .	21	7	46.12	29	16	59.60

τ Cygni.

Aug. 13 . .	21	8	48.34	37	24	26.04
Sept. 6 . .			48.45			27.20
Oct. 4 . .			48.32			26.49
9 . .			48.24			26.64

Lalande, 41341.

Sept. 3 . .	21	9	33.48	36	37	49.66
Oct. 11 . .			33.79			48.65

Lalande, 41419.

Sept. 15 . .	21	11	42.32	38	35	6.30

υ Cygni.

Oct. 15 . .	21	11	45.17	34	16	9.48

Anonymous.

Aug. 19 . .	21	13	23.50	37	36	22.83
26 . .			23.37			23.06

Lalande, 41624.

Sept. 16 . .	21	16	48.05	37	59	44.99

Lalande, 41627.

Sept. 15 . .	21	16	55.68	38	4	7.43
Oct. 25 . .			55.92			7.05

Anonymous.

Sept. 14 . .	21	19	8.83	36	2	36.88

B. A. C. 7453.

Sept. 1 . .	21	19	39.51	36	1	18.36
10 . .			39.49			17.61

B. A. C. 7462.

Oct. 18 . .	21	21	14.29	36	28	1.52

Lalande, 42034.

Sept. 10 . .	21	27	30.10	37	51	49.39
14 . .			29.95			49.52

B, A. C. 7505.

Aug. 19 . .	21	28	39.06	37	51	49.72
Oct. 4 . .			39.13			49.75
9 . .			38.98			49.43

Lalande, 42315.

Sept. 16 . .	21	34	42.42	33	59	44.28

Anonymous.

Sept. 3 . .	21	35	54.46	36	52	8.65
13 . .			54.39			9.02

Anonymous.

Sept. 13 . .	21	36	43.07	37	13	14.46
14 . .			43.61			13.70

Anonymous.

Sept. 3 . .	21	37	4.25	37	19	59.55
6 . .			3.86			59.85

Lalande, 42507.

Oct. 4 . .	21	40	30.76	36	57	59.81
15 . .			30.71			60.28

Lalande, 42546.

Sept. 15 . .	21	41	49.56	35	53	11.85

LALANDE, 42563.

		h. m. s.	° ′ ″
Oct.	16	21 42 15.84	37 57 12.20
	18	15.62	11.84

ANONYMOUS.

Sept.	14	21 43 9.64	36 23 6.12
Oct.	4	9.54	5.55

ANONYMOUS.

Oct.	25	21 45 42.40	37 43 39.86

LALANDE, 42765.

Sept.	16	21 48 57.22	35 26 18.27

ANONYMOUS.

Oct.	18	22 2 42.41	36 40 15.09

ANONYMOUS.

Oct.	28	22 3 55.70	38 6 41.55

LALANDE, 43319.

Oct.	25	22 4 39.10	35 35 31.08
	26	38.80	31.60

LALANDE, 43320.

Oct.	15	22 4 41.46	36 33 22.91

B. A. C. 7753.

Oct.	15	22 6 9.83	33 51 60.02
	16	9.71	60.89
	26	10.14	59.88

ANONYMOUS.

Nov.	5	22 9 25.04	37 36 40.09

B. A. C. 7777.

Oct.	9	22 9 26.02	37 0 13.21
	28	26.41	12.57

LALANDE, 43630.

Sept.	10	22 13 51.98	36 32 46.29
Oct.	4	52.53	47.00

ANONYMOUS.

Nov.	5	22 14 31.59	36 31 32.56

LALANDE, 43751.

Sept.	15	22 17 16.35	37 48 39.54

ANONYMOUS.

Oct.	26	22 26 40.66	37 21 23.35

LALANDE, 44195.

Sept.	16	22 29 19.49	34 47 15.10

LALANDE, 44319.

Oct.	25	22 32 17.87	36 35 47.26

B. A. C. 7901.

Oct.	9	22 32 32.30	38 16 17.69

LALANDE, 44340.

		h. m. s.	° ′ ″
Oct.	26	22 32 44.62	36 34 27.38
	28	44.82	27.08

ANONYMOUS.

Oct.	29	22 32 50.12	36 37 3.28

ANONYMOUS.

Sept.	10	22 36 3.08	37 4 34.36
	13	3.11	35.36

LALANDE, 44466.

Aug.	18	22 36 6.93	37 1 7.30
Sept.	3	7.06	8.66

LALANDE, 44642.

Sept.	14	22 41 19.56	36 37 43.26
Oct.	4	19.05	44.06

LALANDE, 44848.

Oct.	18	22 17 43.63	35 12 7.56

ANONYMOUS.

Oct.	29	22 47 44.11	35 11 8.85

LALANDE, 44854.

Oct.	9	22 48 4.35	36 16 42.44
	25	4.46	42.56

LALANDE, 44862, *a*.

Oct.	18	22 48 40.62	35 32 51.52

LALANDE, 44862.

Oct.	15	22 48 45.75	35 33 9.32
	18	46.76	4.27

LALANDE, 44922.

Aug.	25	22 50 45.62	38 30 26.84

LALANDE, 45078.

Sept.	14	22 55 4.82	36 40 21.08

β PEGASI.

Jan.	6	22 56 30.43	27 16 15.62

ANONYMOUS.

Sept.	14	22 57 18.17	38 6 12.67

LALANDE, 45323.

Aug.	11	23 1 53.09	38 6 13.71
Sept.	6	53.65	13.78

ANONYMOUS.

Oct.	18	23 4 12.62	37 4 54.24
Nov.	5	12.56	54.21

LALANDE, 45588.

Aug.	25	23 9 46.53	37 8 36.27

ANONYMOUS.

Nov.	11	23 13 29.79	36 41 59.55

B. A. C. 8136.

		h. m. s.	° ′ ″
Sept.	3	23 13 39.53	37 21 51.57
	13	39.49	51.27
Oct.	4	39.48	51.49
	29	39.91	51.74

B. A. C. 8139.

Oct.	28	23 14 5.24	37 45 41.66

ANONYMOUS.

Oct.	26	23 16 27.31	36 49 53.31
	28	27.88	52.82

B. A. C. 8195.

Nov.	11	23 23 55.39	38 24 43.23

ANONYMOUS.

Oct.	26	23 24 28.45	37 47 47.32

LALANDE, 46097.

Oct.	29	23 24 38.36	37 28 48.31
Nov.	5	37.99	48.33

ANONYMOUS.

Oct.	18	23 25 2.11	34 7 31.77

LALANDE, 46188.

Oct.	28	23 27 18.38	36 58 2.71

ANONYMOUS.

Nov.	5	23 35 45.58	36 6 19.46
	11	45.74	19.17

ANONYMOUS.

Nov.	11	23 45 10.67	34 4 33.00

LALANDE, 46811.

Oct.	28	23 45 38.37	34 13 11.48

BESSEL Z. 386.

Nov.	29	23 47 13.12	36 45 36.11

LALANDE, 46873.

Sept.	3	23 47 28.94	37 14 8.96

LALANDE, 47049.

Aug.	11	23 52 23.23	38 1 27.14
	25	22.88	25.81

ANONYMOUS.

Sept.	10	23 52 34.55	37 28 10.71
	14	34.54	10.68
Oct.	9	34.50	10.46
	25	34.27	11.[illegible]

LALANDE, 47269.

Oct.	4	23 59 5.51	37 47 26.77
	28	5.94	26.23
	29	6.01	25.40

RIGHT ASCENSIONS AND SEMI-DIAMETERS

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1847.

NATIONAL OBSERVATORY.

SUN.

MEAN TIME—WASHINGTON.		Equation of time.	Limb observed.	RIGHT ASCENSIONS. Observed.	Comp'd.		SID. TIME OF SEMI-DIAM. PASSING. Observed.	Comp'd.	C—O
1847.		m. s.		h. m. s.	s.	s.	s.	s.	s.
July	13	+ 5 20.6		7 29 10.93	11.29	+ 0.36	68.16	68.11	— 0.05
	14	5 27.9		33 14.80	15.03	0.23	8.24	8.04	— 0.20
	16	5 40.6		41 20.66	21.01	0.35	7.87	7.90	+ 0.03
	17	5 46.4		45 23.00	23.22	0.22	7.93	7.83	— 0.10
	20	6 0.0		57 26.54	26.57	0.23	7.63	7.60	— 0.03
	22	6 6.5		8 5 25.95	25.95	0.00	7.35	7.44	+ 0.09
	24	6 10.5		13 22.89	22.97	0.08	7.24	7.28	+ 0.04
	27	6 11.8	II.	25 14.04	14.05	+ 0.01	. .	7.04	. .
	29	6 9.8	II.	33 5.10	5.10	0.00	. .	6.87	. .
	30	6 8.0		36 59.92	59.75	— 0.17	6.64	6.77	+ 0.13
August	3	5 54.3		52 32.31	32.39	+ 0.08	6.44	6.42	— 0.02
	4	5 49.6		56 24.23	24.09	— 0.14	6.22	6.34	+ 0.12
	5	5 44.1		9 0 15.23	15.20	— 0.03	6.26	6.25	— 0.01
	10	5 8.0		19 21.80	22.12	+ 0.32	5.73	5.82	+ 0.09
	11	4 59.2		23 9.52	9.78	+ 0.26	5.73	5.74	+ 0.01
	13	4 40.1		30 43.47	43.40	— 0.07	5.50	5.58	+ 0.08
	18	3 42.7		49 27.71	27.79	+ 0.08	5.21	5.20	— 0.01
	21	3 0.4		10 0 35.95	36.11	0.16	4.87	4.99	+ 0.12
	23	2 30.6		7 59.12	59.23	0.11	4.80	4.86	0.06
	25	1 58.5		15 20.11	20.56	0.45	4.52	4.73	+ 0.21
	27	1 25.6	II.	22 40.19	40.24	0.05	. .	4.61	. .
	30	0 32.7		33 36.81	37.00	0.19	4.47	4.45	— 0.02
	31	+ 0 14.5		37 15.11	15.25	0.14	4.40	4.40	0.00
September	1	— 0 3.9		40 53.19	53.20	0.01	4.35	4.35	0.00
	2	0 22.8		44 30.81	30.87	0.06	4.17	4.31	+ 0.14
	3	0 42.0		48 8.10	8.29	+ 0.19	4.31	4.27	— 0.04
	4	1 1.2		51 45.49	45.44	— 0.05	4.24	4.23	0.01
	6	1 40.7		58 58.90	59.09	+ 0.19	4.17	4.16	0.01
	10	3 1.9		11 13 23.71	24.10	0.39	4.22	4.06	— 0.16
	14	4 25.1		27 46.52	46.89	0.37	3.94	4.00	+ 0.06
	22	7 13.5		56 30.04	30.14	0.10	4.01	4.03	0.02
	29	9 36.9		12 21 42.10	42.62	0.52	4.20	4.21	+ 0.01
October	9	12 37.3		58 6.69	7.08	0.39	4.74	4.72	— 0.02
	11	13 8.4		13 5 28.68	28.80	0.12	4.74	4.86	+ 0.12
	18	14 42.2		31 30.48	30.67	0.19	5.47	5.43	— 0.04
	21	15 13.9		42 48.28	48.58	0.30	5.80	5.70	— 0.10
	25	15 46.9		58 1.45	1.69	0.24	6.00	6.10	+ 0.10
	27	15 59.0		14 5 42.40	42.50	+ 0.10	6.26	6.31	+ 0.05
	28	16 4.0		9 34.18	34.04	— 0.14	6.44	6.42	— 0.02
	29	16 8.2		13 26.36	26.35	— 0.01	6.45	6.53	+ 0.08
November	2	16 17.1		29 3.64	3.59	— 0.05	6.85	6.98	+ 0.13
	3	16 17.4		32 59.86	59.94	+ 0.08	7.10	7.09	— 0.01
	5	16 15.6		40 54.81	55.16	0.35	7.41	7.33	— 0.08
	11	— 15 49.0		15 5 0.72	1.00	+ 0.28	68.03	68.04	+ 0.01

MOON.

MEAN TIME—WASHINGTON. 1847.			Limb observed.	RIGHT ASCENSIONS. Observed.	Comp'd.		SID. TIME OF SEMI DIAM. PASSING. Observed.	Comp'd.	C—O
		h. m. s.		h. m. s.	s.	s.	s.	s.	s.
March	25	7 57 17.25	I.	8 8 44.02	44.86	+ 0.84			
April	22	6 38 57.31	I.	8 40 34.68	35.87	1.19			
	25	8 49 41.06	I.	11 3 29.55	30.79	1.24			
May	24	8 10 28.76	I.	12 18 31.01	32.23	1.22			
June	23	8 17 12.10	I.	14 22 32.05	32.80	0.75			
	24	9 4 49.10	I.	15 15 13.43	14.26	.83			
	25	9 55 4.81	I.	16 9 33.96	34.48	.52			
July	23	8 35 32.44	I.	16 40 12.10	12.93	0.83			
	24	9 29 6.23	I.	17 37 51.24	52.26	1.02			
	27	12 18 10.95	II.	20 39 13.40	14.04	0.64			
August	25	11 54 41.68	—	22 10 0.36	1.92	1.56			
	26	12 50 36.40	II.	23 10 0.81	2.08	1.27			
September	21	9 37 4.41	I.	21 38 17.52	18.57	1.05			
October	20	9 11 20.11	I.	23 6 58.86	59.31	0.45			
	21	10 6 21.11	I.	0 6 5.45	5.89	.44			
	25	13 56 58.04	II.	4 13 6.47	6.68	.21			
November	16	7 1 11.07	I.	22 42 55.40	56.04	.64			
	17	7 53 34.28	I.	23 39 23.77	24.73	.96			
	20	7 38 51.80	I.	2 36 58.11	58.60	.49			
December	15	6 40 18.19	I.	0 17 19.22	19.78	.56			
	18	9 22 9.52	I.	3 10 26.82	27.57	+ 0.75			

MERCURY.

October	11	0 41 20.8		14 0 6.84	6.82	— 0.02			
	18	0 53 19.2		14 39 43.08	42.86	— 0.22			

VENUS.

September	7	1 48 31.7		12 53 26.02	24.95	— 1.07			
	15	1 16 15.3		12 52 36.64	35.65	0.99			
	22	0 40 53.1		12 44 45.55	44.38	1.17			
October	20	22 2 15.1	II.	11 59 60.53	59.82	0.71			
November	2	21 21 39.3	II.	12 10 33.61	33.18	0.43			
	4	21 17 15.1	II.	12 14 1.44	0.98	— 0.46			

MARS.

October	25	12 13 12.7		2 28 51.01	51.45	— 2.56	0.66	0.67	+ 0.01
November	2	11 30 16.8		17 33.55	31.18	2.37	0.72	0.65	— 0.07
	5	11 14 26.4		13 30.26	27.70	2.56	0.73	0.64	0.09
	11	10 43 32.1		6 10.20	8.02	2.18	0.70	0.62	— 0.08
	17	10 14 6.6		2 8 19.13	17.15	1.98	0.52	0.59	+ 0.07
	26	9 33 21.2		1 54 56.04	54.12	1.92	0.53	0.55	+ 0.02
December	29	7 37 56.1		2 9 18.33	17.19	— 1.19	0.11	0.38	— 0.03

FLORA.

MEAN TIME—WASHINGTON. 1847.			Limb observed.	RIGHT ASCENSIONS. Observed.	Comp'd.	C — O	SID. TIME OF SEMI-DIAM. PASSING. Observed.	Comp'd.	C — O
		h. m. s.		h. m. s.					
November	29	12 5 16.0		4 38 55.69					
December	6	11 30 48.7		31 8.46					
	7	11 24 49.1		30 4.38					
	8	11 19 49.1		29 0.13					
	15	10 45 20.4		22 1.67					
	21	10 16 45.8		17 1.78					
	24	10 2 54.7		14 58.06					
	28	9 45 54.7		4 13 41.65					

IRIS.

October	3	7 3 15.3		19 51 31.61					
	4	7 0 2.1		52 14.43					
	25	5 58 25.8		20 13 15.59					
	28	5 50 32.2		17 10.41					
November	3	5 34 59.0		25 13.96					

HEBE.

August	11	7 36 3.8		16 55 28.23					

JUPITER.

December	28	12 44 3.5		7 12 19.61	19.57	— 0.04	1.72	1.71	— 0.01

SATURN.

					s.	s.	s.	s.	s.
August	25	12 33 58.6		22 49 36.31	34.85	— 1.46	0.64	0.63	— 0.01
	30	12 13 7.3	I.	48 11.73	10.41	1.32	. .	0.63	. .
September	1	12 4 41.6		47 37.78	36.33	1.45	0.60	0.63	+ 0.03
	4	11 52 3.1		46 46.83	45.11	1.72	0.56	0.63	0.07
	10	11 26 46.0		45 4.83	3.20	1.63	0.53	0.63	0.10
	16	11 1 31.1		43 25.44	23.79	1.65	0.57	0.63	0.06
October	8	9 29 47.9		38 11.04	9.64	1.40	0.60	0.62	+ 0.02
	11	9 17 26.4		37 37.23	35.88	1.35	0.65	0.62	— 0.03
	18	8 48 47.6		26 29.55	28.03	1.52	0.58	0.61	+ 0.03
	20	8 40 39.2		36 13.02	11.65	1.37	0.56	0.61	+ 0.05
	21	8 35 36.0		36 5.54	3.98	1.56	0.65	0.61	— 0.04
	26	8 16 23.2	I.	35 32.28	30.93	1.35	. .	0.60	. .
November	11	7 12 46.3		34 49.74	48.38	1.36	0.52	0.59	+ 0.07
	18	6 45 27.8		35 2.79	1.43	1.36	0.52	0.59	0.07
	20	6 37 43.6		22 35 10.34	8.74	— 1.60	0.56	0.59	+ 0.03

URANUS.

IEAN TIME—WASHINGTON. 1847.			Limb observed.	RIGHT ASCENSIONS.		
				Observed.	Comp'd.	C—O
		h. m. s.		h. m. s.	s.	s.
tober	20	11 3 18.7		0 59 16.04	25.39	+ 9.35

NEPTUNE.

ly	24	13 58 38.7		22 8 8.03	8.37	+ 0.34
	29	13 38 32.3		7 41.11	41.15	0.04
igust	5	13 10 20.5		7 0.53	0.72	0.19
	11	12 46 10.0		6 24.37	24.51	0.14
	12	12 42 7.7		6 18.04	18.36	0.32
	18	12 17 53.9		5 40.48	41.09	0.61
	19	12 13 52.2		5 34.56	34.83	0.27
	25	11 49 39.2		4 56.90	57.21	0.31
	26	11 45 37.2		4 50.91	50.95	0.04
	30	11 29 28.5		4 25.77	26.03	0.26
ptember	1	11 21 24.4		4 13.49	13.68	+ 0.19
	3	11 13 20.5		4 1.42	1.41	— 0.01
	4	11 9 18.4		3 55.18	55.32	+ 0.14
	10	10 45 7.4		3 19.49	19.49	0.00
	13	10 33 2.0		3 1.73	2.16	0.43
	14	10 29 0.7		2 56.32	56.48	0.16
	16	10 20 57.4		2 45.26	45.28	0.02
	21	10 0 52.0		2 18.33	18.34	0.01
ober	8	8 52 44.0		1 1.04	1.20	+ 0.16
	9	8 48 44.6		0 57.53	57.48	— 0.05
	15	8 24 49.0		0 37.32	37.35	+ 0.03
	18	8 12 52.8		0 28.86	28.80	— 0.06
	21	8 0 57.5		0 21.29	21.25	— 0.04
	25	7 45 5.6		0 12.90	12.85	— 0.05
	26	7 41 7.8		0 11.00	11.05	+ 0.05
	29	7 29 15.4		0 6.39	6.38	— 0.01
vember	2	7 13 27.4		0 2.02	1.92	— 0.10
	4	7 5 34.3		22 0 0.66	0.45	— 0.21
	5	7 1 37.6		21 59 59.95	59.91	— 0.04
	11	6 38 1.6		21 59 59.32	59.42	+ 0.10

DECLINATIONS AND SEMI-DIAMETERS

OF THE

SUN, MOON AND PLANETS

OBSERVED WITH

THE MURAL CIRCLE.

1847.

NATIONAL OBSERVATORY.

SUN.

MEAN TIME—WASHINGTON.			Limb observed.	APPARENT DECLINATIONS.			VERTICAL SEMI-DIAMETERS.		
1847.		Equation of time.		Observed.	Computed.	C—O.	Observed.	Computed.	C — O.
		m. s.		° ′ ″	″	″	′ ″	″	″
January	5	+ 5 39.6		— 22 37 55.94	56.65	— 0.71	16 18.27	17.24	— 1.03
	6	6 6.2		22 30 58.04	58.40	.36	21.02	17.21	3.81
	9	7 23.1		22 7 23.66	24.17	.51	20.30	17.09	3.21
	12	8 35.2		21 39 54.91	55.89	.98	19.53	16.91	2.62
	13	8 58.1		21 29 55.58	55.72	.14	19.23	16.85	2.38
	23	12 8.8		19 27 57.13	57.47	.34	18.70	16.00	2.70
February	1	13 53.0		17 7 25.32	26.58	1.26	16.82	14.85	1.97
	5	14 17.9	S.	15 56 52.21	53.35	. .	. .	14.20	. .
	6	14 22.1		15 38 29.63	32.86	3.23	17.33	14.03	3.30
	12	14 31.2		13 43 5.90	7.72	1.82	13.39	12.90	0.49
	15	14 25.5		12 42 15.54	17.03	1.49	13.63	12.30	1.33
	23	13 38.8		9 51 33.97	36.40	— 2.43	14.35	10.60	3.75
March	2	12 24.8	S.	7 14 21.08	22.68	. .	. .	8.95	. .
	5	11 45.3		6 5 20.54	19.44	+ 1.10	13.03	8.19	(4.84)
	6	11 31.2		5 42 6.27	7.80	— 1.53	9.40	7.94	1.46
	19	7 59.2		0 35 48.31	50.44	2.13	9.11	4.45	(4.66)
	20	7 41.3		— 0 12 6.86	8.30	— 1.44	6.12	4.18	1.94
April	1	4 0.1		+ 4 29 40.85	41.04	+ 0.19	4.50	0.92	3.58
	3	3 23.7		5 15 47.66	47.16	— 0.50	2.09	0.36	1.73
	7	2 12.9		6 46 51.58	51.02	0.56	15 63.05	59.24	3.81
	8	1 55.8		7 9 21.87	20.76	— 1.11	60.87	58.96	1.91
	12	+ 0 49.8	S.	8 38 4.18	4.45	. .	. .	57.86	. .
	16	— 0 11.1		10 4 29.79	30.93	+ 1.21	58.86	56.79	2.07
	21	1 19.0		11 48 48.88	47.06	— 1.82	57.92	55.51	2.41
	26	2 16.5		13 28 10.40	11.52	+ 1.12	55.62	54.28	1.34
	28	2 36.3		14 6 27.05	26.44	— 0.61	56.71	53.80	2.91
May	6	3 34.0		16 29 43.71	45.96	+ 2.25	54.70	51.92	2.78
	17	3 53.0		19 17 51.45	51.40	— 0.05	51.43	49.63	1.80
	20	— 3 46.3		19 57 6.74	6.66	0.08	50.74	49.09	1.65
June	21	+ 1 19.5		23 27 21.73	21.63	— 0.10	46.97	45.38	1.59
July	6	4 18.8		22 43 35.45	35.54	+ 0.09	48.30	45.11	3.19
	19	5 56.3		20 53 55.02	55.71	0.69	46.15	45.70	0.45
August	5	5 44.1		17 2 20.00	21.45	1.45	49.54	47.54	2.00
	10	5 8.3		15 37 58.73	58.76	0.03	49.66	48.29	1.37
	12	4 50.0		15 2 25.15	26.05	0.90	52.26	48.62	3.64
	19	3 28.5		12 50 43.69	45.23	1.54	51.64	49.92	1.72
	20	3 14.8		12 31 3.77	5.43	1.66	52.79	50.14	2.65
	26	1 42.5		10 29 7.07	8.15	1.08	53.60	51.37	2.23
	27	+ 1 25.6		10 8 11.17	11.74	0.57	53.19	51.59	1.60
September	14	— 4 24.7	N.	+ 3 28 45.38	45.73	. .	. .	55.86	. .
October	1	10 15.2		— 3 17 44.23	43.47	0.76	16 3.92	0.45	3.47
	16	14 17.9		8 50 29.61	29.03	0.58	6.66	4.59	2.07
	18	14 42.0		9 34 30.03	30.02	+ 0.01	7.24	5.15	2.09
	19	14 53.2	N.	9 56 11.92	18.08	. .	. .	5.43	. .
	20	15 3.7		10 17 54.84	57.40	— 2.56	9.84	5.70	4.14
	26	15 53.2		12 24 28.36	27.68	+ 0.68	9.07	7.29	1.78
	28	16 4.1		13 5 13.08	10.14	2.94	10.26	7.80	2.46
November	2	16 17.1		14 43 15.44	15.42	0.02	11.23	9.03	2.20
	8	16 5.8		16 33 2.74	2.24	0.50	12.03	10.45	1.58
	11	15 48.8		17 24 16.18	14.91	+ 1.27	13.58	11.13	2.45
	18	14 40.0		19 12 54.49	54.96	— 0.47	15.22	12.65	2.57
	27	12 13.4		21 7 26.89	27.80	0.91	19.91	14.30	5.61
	29	11 32.5		21 28 41.10	41.36	0.26	19.34	14.61	4.73
December	18	3 12.1		23 24 7.78	8.96	1.18	20.19	16.82	3.37
	23	— 0 43.0		23 26 59.18	59.79	0.61	18.96	17.12	1.84
	28	+ 1 45.9		23 18 1.08	3.06	1.98	18.84	17.26	1.58
	29	2 15.3		23 14 49.46	52.16	2.70	17.92	17.27	0.65
	30	2 44.5		— 23 11 10.77	11.28	— 0.51	19.22	17.28	— 1.94

MOON.

MEAN TIME—WASHINGTON. 1847.			Limb observed.	APPARENT DECLINATIONS. Observed.	Computed.	C—O. N. L.	C—O. S. L.	Cor. applied for def. illumination.	VERTICAL SEMI-DIAMETERS. Observed.	Computed.	C—O.
	h. m. s.			° ′ ″	″	″	″	″	′ ″	′ ″	″
February	1 13 30 37.1		S.	+ 6 37 1.79	8.44	. .	+ 6.65	. .	. .	14 43.58	. .
	5 16 20 35.7		S.	— 8 40 34.94	27.56	. .	7.38	. .	. .	14 52.28	. .
March	5 15 2 53.5		S.	— 10 47 40.44	30.27	. .	10.17	. .	. .	14 52.62	. .
	24 7 9 42.9		N.	+ 16 57 15.39	15.08	— 0.31	. .	. .	. .	15 3.48	. .
	25 7 57 18.1		N.	+ 14 53 22.16	24.96	+ 2.80	. .	. .	. .	15 54.60	. .
	31 12 17 16.9	N. / S.	+ 6 6 24.19 / 32.76	20.85	3.34 / . .	. . / 11.91	+ 0.44 / . .	14 50.80	14 46.51	— 4.29
June	24 9 4 49.9		N.	— 15 5 59.15	52.02	7.13	. .	. .	. . .	15 11.76	. .
August	19 6 25 19.3		N.	— 17 1 46.52	44.37	2.15	. .	. .	. . .	15 12.12	. .
	25 11 54 43.2	S. / N.	— 7 51 47.47 / 41.02	37.63	. . / + 3.39	9.84 / . .	— 1.28 / . .	16 37.54	16 34.32	— 3.22
	26 12 50 37.7		N.	— 3 9 30.98	33.03	— 2.05	. .	. .	. . .	16 38.12	. .
October	21 10 6 21.5		S.	+ 1 26 33.72	35.78	. .	2.06	. .	. . .	16 37.63	. .
November	16 7 1 11.7		S.	— 5 27 54.13	50.27	. .	3.86	. .	. . .	16 7.56	. .
	17 7 53 35.0		S.	— 0 52 23.59	18.16	. .	5.43	. .	. . .	16 17.83	. .
	20 10 38 52.3	S. / N.	+ 12 28 58.21 / 70.96	61.62	. . / — 9.34	3.41 / . .	. . / + 9.15	16 36.98	16 30.61	— 6.37
December	18 9 22 10.3		S.	+ 14 13 4.97	7.54	. .	+ 2.57	. .	. . .	16 16.12	. .

MERCURY.

MEAN TIME—WASHINGTON. 1847.			Limb observed.	APPARENT DECLINATIONS. Observed.	Comp'd.	C — O.	VERTICAL SEMI-DIAMETERS. Observ'd	Comp'd.	C — O.
	h. m. s.			° ′ ″	″	″	″	″	″
March	2 0 58 30		Center	— 2 45 55.65	54.32	+ 1.33	. .	. .	. .
	5 1 5 30		"	— 0 5 6.73	3.45	3.28	. .	. .	. .
	6 1 7 30		. .	+ 0 47 18.67	21.24	+ 2.57	3.41	2.89	— 0.52
April	27 22 20 27		"	1 44 12.22	2.73	— 9.49	. .	. .	. .
May	16 22 41 59		"	11 41 47.14	46.14	— 1.00	. .	. .	. .
August	26 22 51 17		. .	+16 10 58.43	61.64	+ 3.21	4.15	3.34	— 0.81
October	16 0 49 58		"	—16 5 55.18	56.77	— 1.59	. .	. .	. .
	18 0 53 18		. .	17 12 23.70	27.12	3.42	2.53	2.50	— 0.03
November	2 1 14 15		"	—23 21 33.72	36.80	— 3.08	. .	. .	. .

VENUS.

February	5 1 4 31		. .	—13 19 17.31	16.62	+ 0.69	5.79	4.97	— 0.82
	6 1 5 23		. .	—12 52 54.97	55.14	— 0.17	5.36	4.98	0.38
March	5 1 23 34		. .	+ 0 26 17.81	21.10	3.29	6.29	5.20	1.09
	6 1 24 7		. .	0 57 25.19	28.76	3.57	5.83	5.21	0.62
April	28 2 6 33		. .	23 6 54.64	58.15	3.51	6.74	6.16	0.58
May	6 2 16 20		. .	24 33 26.41	28.91	— 2.50	7.29	6.39	0.90
	17 2 30 19		. .	+25 20 47.16	46.92	+ 0.24	7.65	6.76	0.89
August	26 7 30 45		N.	— 9 13 54.38	54.73	— 0.35	. .	18.48	. .
	31 7 18 24		N.	10 52 49.05	47.92	+ 1.13	. .	20.01	. .
October	18 22 10 35		S.	5 37 83.81	51.58	32.23	. .	26.72	. .
	20 22 2 14		. .	5 3 74.05	44.09	29.96	27.41	26.03	1.38
	21 21 58 17		. .	4 48 36.26	6.83	29.43	28.23	25.66	2.57
	25 21 43 56		. .	3 55 85.34	58.14	27.20	27.96	24.24	3.72
November	10 21 6 18		. .	3 13 19.74	1.59	18.15	19.99	18.87	1.12
	19 20 55 4		. .	— 4 24 56.14	43.86	+12.28	17.45	16.50	— 0.95

MARS.

MEAN TIME—WASHINGTON. 1847.			Limb observed.	APPARENT DECLINATIONS.			VERTICAL SEMI-DIAMETERS.		
				Observed.	Comp'd.	C — O.	Observ'd	Comp'd.	C — O.
		h. m. s.		° ′ ″	″	″	″	″	″
October	18	12 50 0	. .	+13 33 12.00	17.16	+ 5.16	11.05	9.75	— 1.30
	20	12 39 32	. .	13 27 39.16	43.86	4.70	12.02	9.77	2.25
	21	12 4 6	. .	13 28 44.40	48.35	3.95	11.68	9.78	1.90
	26	12 7 39	. .	13 8 58.59	4.77	6.18	12.40	9.75	2.65
November	11	10 43 30	. .	12 20 36.57	44.92	8.35	11.06	9.08	1.98
	17	10 14 5	. .	12 10 23.34	31.94	8.60	10.97	8.66	2.31
	20	10 0 1	. .	12 7 56.25	65.20	8.95	9.76	8.41	1.35
December	29	7 37 55	. .	+14 26 24.79	35.16	+10.37	9.03	5.53	— 3.50

FLORA.

December	3	11 44 57	. .	+14 6 37.44					
	6	11 29 50	. .	14 13 14.96					
	7	11 24 50	. .	14 15 40.28					
	8	11 19 50	. .	14 18 7.70					
	18	10 30 55	. .	14 49 40.77					
	22	10 12 6	. .	+15 5 12.45					

IRIS.

October	1	7 9 48	. .	—14 25 4.55					
	4	7 0 3	. .	14 23 53.46					
	26	5 55 46	. .	13 49 52.02	57.04	— 5.02			
	28	5 50 27	. .	13 44 23.65	25.20	1.55			
November	2	5 37 31	. .	—13 28 35.21	40.50	— 5.29			

JUNO.

August	5	9 48 11	. .	— 6 44 69.53	45.96	+23.57			

CERES.

January	5	8 15 19	. .	+14 41 33.03					

JUPITER.

January	5	9 23 50	. .	+20 58 16.06	17.30	+ 1.24	22.81	21.70	— 1.11
	11	8 58 21	. .	20 55 14.31	14.74	0.43	21.68	21.35	— 0.35
	12	8 54 9	. .	20 54 48.29	50.34	2.05	21.23	21.29	+ 0.06
	14	8 45 47	. .	20 54 4.95	7.11	2.16	21.97	21.17	— 0.80
ber -	28	12 44 3	. .	+22 35 0.39	3.53	+ 3.14	23.10	21.88	— 1.22

SATURN.

EAN TIME—WASHINGTON. 1847.			Limb observed.	APPARENT DECLINATIONS.			VERTICAL SEMI-DIAMETERS.		
				Observed.	Comp'd.	C — O.	Observ'd	Comp'd.	C — O.
	h. m. s.			° ′ ″	″	″	″	″	″
gust	18	13 3 36	. .	— 9 27 40.70	49.85	— 9.15	9.73	8.59	— 1.14
	26	12 29 57	. .	9 41 54.48	64.16	9.68	9.45	8.62	— 0.83
	30	12 13 6	. .	9 49 7.47	13.82	6.35	8.55	8.62	+ 0.07
tember	6	11 43 35	. .	10 1 32.82	41.65	8.83	9.98	8.62	— 1.36
ober	8	9 29 46	. .	10 48 41.23	49.73	8.50	8.13	8.42	+ 0.29
	9	9 25 39	. .	10 49 43.62	52.73	9.11	9.31	8.41	— 0.90
	11	9 17 25	. .	10 51 43.50	52.77	9.27	8.91	8.39	0.52
	15	9 1 1	. .	10 55 21.38	28.59	7.21	8.59	8.34	0.25
	18	8 48 46	. .	10 57 40.99	48.20	7.21	8.52	8.31	0.21
	26	8 16 22	. .	11 2 14.39	23.70	9.31	9.89	8.23	0.66
	27	8 12 20	. .	11 2 39.62	48.01	8.39	8.98	8.22	0.76
vember	5	7 36 25	. .	11 4 33.00	42.10	9.10	9.45	8.11	1.34
	6	7 32 27	. .	11 4 35.28	42.99	7.71	8.97	8.10	0.87
	11	7 12 45	. .	11 4 3.60	11.64	8.04	8.75	8.04	0.71
	16	6 53 13	. .	11 2 32.71	40.81	8.10	8.10	7.98	0.12
	17	6 49 19	. .	11 2 8.75	15.60	6.85	9.09	7.97	1.12
	20	6 37 42	. .	—11 0 37.88	45.90	— 8.02	8.67	7.93	— 0.74

URANUS.

tember	6	14 2 41	Center	+ 6 14 19.81	68.64	+48.83
ober	4	12 8 47	"	5 50 24.48	73.90	49.42
	26	10 39 1	"	+ 5 30 23.57	72.60	+49.03

NEPTUNE.

gust	2	13 22 26	Center	—12 12 38.05	40.37	— 2.32
	18	12 17 54	"	21 46.61	48.59	1.98
	19	12 14 52	"	22 19.88	23.59	3.71
	26	11 45 37	"	26 25.70	27.82	2.12
	30	11 29 29	"	28 45.02	45.79	0.77
tember	6	11 1 15	"	32 38.82	41.54	2.72
ober	8	8 52 44	"	47 17.79	18.02	0.23
	11	8 40 46	"	48 11.33	15.46	4.13
	15	8 24 49	"	49 22.10	23.78	1.68
	18	8 12 53	"	50 8.01	8.57	0.56
	21	8 0 57	"	50 46.21	47.69	1.48
	26	7 41 8	"	51 37.81	40.01	2.20
	27	7 37 10	"	51 46.12	48.48	2.36
vember	5	7 1 38	"	52 31.36	34.03	2.67
	11	6 38 2	"	52 30.74	32.87	2.13
	18	6 10 36	"	—12 51 58.11	59.19	— 1.08

RIGHT ASCENSIONS, DECLINATIONS AND SEMI-DIAMETERS

OF THE

SUN, MOON AND PLANETS,

OBSERVED WITH

THE MERIDIAN CIRCLE.

1847.

NATIONAL OBSERVATORY.

SUN.

MEAN TIME OF OBSERVATION		Limb observed	RIGHT ASCENSIONS.			SID. TIMES OF SEMI-DIAMETER PASSING.			Limb observed.	DECLINATIONS.			SEMI-DIAMETE		
			Observed.	Comp.	C—O.	Obs'd.	Comp.	C—O.		Observed.	Comp.	C—O.	Obs'd.	Comp.	C
			h. m. s.	s.	s.	M. s.	s.	s.		° ′ ″	″	″	′ ″	″	
			23 4 21.19	21.14	+0.04	1 10.54	10.80	+0.26	N.	−22 37 55.29	56.65	−1.36	16 .	17.24	
			23 8 44.35	44.34	— .01	10.66	10.74	+ .74	N.	22 30 58.40	58.40	0.00	. .	17.21	
			23 17 28.62	29.37	+ .75	10.87	10.16	— .26		. . . .	. .	. .	. .	17.13	
			23 21 51.50	51.14	— .36	10.42	10.53	+ .11	N.	22 7 19.46	24.17	−4.71	. .	17.09	
			23 34 53.29	53.16	— .04	10.38	10.29	— .09	N.	21 39 58.35	55.89	+2.46	. .	16.91	
			23 39 12.57	12.65	+ .08	10.27	10.19	.08	..	. . . .	. .	. .	. .	16.85	
		II.	20 13 23.37	24.09	+ .72	. .	9.43	. .	S.	19 55 27.42	24.42	+3.00	. .	16.23	
		I.	20 21 50.19	49.45	— .74	. .	9.22	. .	..	. . . .	. .	. .	. .	16.00	
			20 42 38.92	38.52	.40	8.82	8.66	.16	..	. . . .	. .	. .	. .	15.42	
		II.	20 39 2.92	2.86	.06	. .	8.21	. .	N.	17 7 24.34	26.58	−2.24	. .	14.85	
		I.	21 15 14.22	14.09	.13	. .	7.74	. .	..	. . . .	. .	. .	. .	14.20	
			21 19 15.45	14.89	.56	7.80	7.63	.17	N.	15 38 25.41	32.86	7.45	. .	14.03	
			. . . .	. .	. .	6.77	6.63	— .14	S.	12 42 16.83	17.03	0.20	. .	12.30	
			22 25 33.13	32.89	.24	5.81	5.85	+ .04	..	. . . .	. .	. .	. .	10.60	
			22 29 21.03	20.60	.43	6.00	5.76	— .24	N.	9 29 27.56	32.20	4.64	. .	10.37	
May	1		22 48 10.81	10.23	.58	5.43	5.36	.07	..	. . . .	. .	. .	. .	9.21	
			22 51 54.88	54.53	.35	5.58	5.29	.29	N.	7 14 19.26	22.68	3.42	. .	8.95	
			23 3 5.08	4.56	.52	5.29	5.08	.21	N.	6 5 15.58	19.44	3.86	. .	8.19	
			23 6 47.49	47.03	.46	5.11	5.02	.09	N.	5 42 3.95	7.80	3.85	. .	7.94	
		I.	23 32 34.46	34.16	.30	. .	4.66	. .		— 2 57 52.32	56.36	4.30	. .	6.07	
			23 47 12.17	11.96	— .21	4.91	4.51	.40		. . . .	. .	. .	. .	4.99	
April	1		0 41 44.52	44.98	+ .46	4.81	4.41	.40		. . . .	. .	. .	. .	0.92	
			1 3 37.07	36.82	— .25	4.78	4.57	— .21		+ 6 46 60.39	51.02	9.37	15 60.84	59.24	—
	9		1 10 55.79	55.78	— .01	4.52	4.64	+ .12		7 31 45.08	43.36	1.72	60.75	58.68	
	10		1 14 35.25	35.66	+ .31	5.12	4.67	— .45		7 53 62.01	58.33	3.68	58.64	58.40	
	14		1 29 17.70	18.17	+ .47	4.89	4.85	.04		9 21 37.72	36.21	1.51	61.56	57.32	
	20		1 51 32.87	32.22	— .55	5.18	5.18	.00		11 28 19.16	17.90	1.26	57.86	55.76	
	21		1 55 16.10	16.03	— .07	5.37	5.25	.12		16 48 50.50	47.06	3.44	58.47	55.51	
	22		1 59 0.15	0.16	+ .01	5.38	5.31	.07		12 9 8.14	4.62	3.52	59.19	55.26	
	26		2 14 1.33	1.12	— .21	5.69	5.59	.10		13 28 12.34	11.52	0.82	56.12	54.28	
May	6		2 52 9.00	8.98	.02	6.63	6.36	.27		16 29 47.04	45.96	1.08	55.44	51.92	
	7		2 59 53.63	53.33	.30	6.63	6.52	.11		17 2 62.16	58.55	3.61	56.34	51.69	
	17		3 35 12.73	12.03	— .70	8.12	7.26	.86		19 17 53.29	51.40	1.89	53.61	49.63	
	18		3 39 9.78	10.31	+ .53	7.53	7.34	.19		19 31 18.29	16.46	1.83	53.85	49.45	
	20		3 47 8.24	8.47	+ .23	7.58	7.51	— .07		19 57 8 41	6.66	1.75	52.43	49.09	
	21		3 51 8.46	8.35	— .11	7.50	7.58	+ .08		20 9 31.47	31.27	0.20	52.90	48.92	
	25	II.	4 7 13.18	12.99	— .19	. .	7.88	. .		. . . .	. .	. .	. .	48.28	
	26	II.	4 19 21.51	21.62	+ .11	. .	8.08	. .	S.	21 26 32.31	32.11	−0.20	. .	47.82	
June	2		4 39 44.87	45.12	+ .25	8.38	8.38	.00		22 10 30.25	30.43	+0.18	51.72	47.11	
	11		5 4 26.60	26.47	— .13	8.70	8.66	— .04		. . . .	. .	. .	. .	46.37	
	17		5 41 46.65	46.55	— .10	8.98	8.88	.10		23 23 23.01	24.86	1.85	51.72	45.59	
	21		5 58 24.87	24.92	+ .05	9.07	8.90	— .17		. . . .	. .	. .	. .	45.38	
	23		6 6 43.98	43.98	.00	8.88	8.89	+ .01		. . . .	. .	. .	. .	45.29	
July	3	II.	6 43 3.55	3.46	— .09	. .	8.68	. .		. . . .	. .	. .	. .	45.10	
Aug.	19		9 53 10.99	11.07	+ .08	5.09	5.13	+ .04		12 50 46.74	45.23	1.51	54.23	49.92	
	20		9 56 53.77	53.83	+ .06	5.20	5.06	— .14		12 31 4.86	5.43	+0.57	52.89	50.14	
	21		10 0 36.42	36.11	— .31	5.00	4.99	.01		12 11 14.62	13.73	−0.89	53.29	50.33	
	26		10 19 0.52	0.60	+ .08	4.80	4.67	— .13		10 29 9.62	8.15	−1.47	54.96	51.37	
	27		10 22 40.33	40.24	— .09	4.53	4.61	+ .08		10 8 9.55	11.74	+2.19	54.08	51.59	
	31		. . . .	. .	. .	4.50	4.40	— .10		8 42 49.25	52.21	2.96	56.53	52.46	
Sept.	1		. . . .	. .	. .	4.18	4.35	+ .17		8 21 7.22	10.35	3.13	55.21	52.69	
	3		10 48 8.09	8.29	+ .20	4.36	4.27	— .09		7 37 19 47	22.56	3.09	58.95	53.14	
	4	II.	10 51 45.04	45.44	+ .40	. .	4.23	. .							
	6		10 58 59.50	59.09	— .41	3.61	4.16	+ .45		6 30 44.85	45.34	+0.49	55.78	53.84	
	14		11 27 46.99	46.89	.10	4.06	4.00	— .06		3 28 49.13	45.73	−3.40	59.64	55.86	
	15	II.	11 31 22.75	22.36	— .39	. .	3.99	. .		3 5 42.17	40.35	1.82	61.65	56.12	
	16	II.	11 34 57.61	57.76	+ .15	. .	3.99	. .							
	17		11 38 33.05	33.14	+ .09	4.08	3.99	— .09		2 19 23.03	19.71	−3.32	60.60	56.66	
	18		11 42 8.59	8.49	— .10	3.91	3.99	+ .08		1 56 2.33	5.18	+2.85	62.39	56.93	
	22		11 56 30.05	30.14	+ .09	4.06	4.03	— .03		+ 0 22 46.37	46.26	−0.11	62.47	58.02	
	29		12 21 42.48	42.62	+ .14	3.29	4.21	+ .92		— 2 20 57.68	61.44	−3.76	15 64.79	59.91	
	30		12 25 19.52	19.55	+ .03	4.22	4.25	— .03							
Oct.	16		13 24 1.44	1.72	−0.28	1 5.21	5.25	+0.04		— 8 50 29.52	29.03	+0.49	16 7.95	4.59	—

SUN—Continued.

MEAN TIME—WASHINGTON. 1847.	Equation of time.	Limb observed.	RIGHT ASCENSIONS. Observed.	Comp.	C—O.	SID. TIMES OF SEMI-DIAMETER PASSING. Obs'd.	Comp.	C—O.	Limb observed.	DECLINATIONS. Observed.	Comp.	C—O.	SEMI-DIAMETERS. Ob'sd.	Comp.	C—O.
	m. s.		h. m. s.	s.	s.	m. s.	s.	s.		° ′ ″	″	″	′ ″	″	″
t. 18	— 14 42.1		13 31 30.58	30.67	+0.09	1 5.41	5.42	+0.01		— 9 34 32.88	30.02	+2.86	16 6.45	5.15	—1.30
19	14 53.0		13 35 16.24	16.03	— .21	5.52	5.52	.00		9 56 18.80	18.08	0.72	7.10	5.43	1.67
20	15 4.2		13 39 1.74	1.99	+ .25	5.61	5.61	.00		10 17 57.74	57.40	+0.34	8.83	5.70	3.13
21	15 13.7		13 42 48.55	48.59	.04	5.56	5.70	.14	N.	10 39 20.59	27.59	—7.01	. .	5.87	. .
22	15 23.2		13 46 35.65	35.89	.24	5.80	5.80	.00		11 0 52.95	48.25	+4.70	8.12	6.13	1.99
26	15 53.8		14 1 51.14	51.72	+ .58	6.21	6.21	+ .00		12 24 24.71	27.68	—2.97	13.18	7.29	5.89
28	16 3.8		14 9 34.39	34.04	— .35	6.43	6.42	— .01		13 5 10.13	10.14	—0.01	11.77	7.80	3.97
29	16 8.3		14 13 26.17	26.35	+ .18	6.61	6.53	.08		13 25 14.71	13.31	+1.40	10.43	8.05	2.38
ov. 2	16 16.8		14 29 3.89	3.59	— .30	7.18	6.97	— .21		14 43 14.15	15.42	—1.27	15.29	8.03	6.26
4	16 17.0		14 36 56.81	57.13	+ .32	7.16	7.20	+ .04		15 20 54.49	52.56	+1.93	12.47	9.51	2.96
6	16 13.0		14 44 53.88	54.03	.15	7.45	7.44	— .01		. . . .	. .	. .	. .	9.98	. .
27	12 13.7		16 11 41.58	41.79	+ .21	9.95	9.84	— .11		21 7 27.91	27.80	+0.11	16.63	14.30	2.33
ec. 4	9 37.4		16 41 54.15	53.54	— .61	10.35	10.46	+ .11		22 14 30.07	31.62	—1.55	22.46	15.32	7.14
6	8 48.0		16 50 36.76	36.88	+ .12	10.63	10.61	— .02		22 29 48.23	52.43	—4.20	16.61	15.58	1.03
7	8 21.8		16 54 59.31	58.96	— .35	10.66	10.68	+ .02		22 36 55.21	53.51	+1.70	20.56	15.68	4.88
18	3 12.5		17 43 31.88	32.32	+ .44	11.25	11.17	— .08		23 24 7.09	8.96	—1.87	21.30	16.82	4.48
23	0 43.2		18 5 44.38	44.63	.25	11.28	11.23	.05		23 26 59.15	59.79	0.64	19.23	17.12	2.11
24	— 0 13.7		18 10 10.59	11.18	.59	11.40	11.22	.18		23 26 7.30	8.94	—1.64	18.89	17.16	1.73
28	+ 1 45.7		18 27 56.51	56.67	+0.16	11.36	11.15	—0.21		—23 18 3.96	0.06	+0.90	18.87	17.26	—1.61

MOON.

MEAN TIME—WASHINGTON. 1847.	Limb observed.	RIGHT ASCENSIONS. Observed.	Comp.	C—O.	SID. TIMES OF SEMI-DIAMETER PASSING. Obs'd.	Comp.	C—O.	Limb observed.	DECLINATIONS. Observed.	Comp.	C—O.	SEMI-DIAMETERS. Obs'd.	Comp.	C—O.
h. m. s.		h. m. s.	s.	s.	s.	s.			° . ″	″	″	′	′ ″	
1. 22 5 8 5.70	I.	1 24 40.03	40.69	+0.66	. .	67.38	. .	S.	+ 8 52 5.77	5.30	— 0.47	. .	16 1.16	
5. 1 10 30 36.50	II.	10 17 57.29	57.90	0.61	. .	1.62	. .	S.	6 37 9.38	8.37	— 1.01	. .	14 43.28	
5 16 20 35.34	II.	13 24 10.27	10.61	0.34	. .	2.20	. .							
ar. 31 12 17 16.58	II.	12 53 5.37	5.72	0.35	. .	1.41	. .							
ril 4 15 23 21.75	II.	16 15 27.42	28.52	1.10	. .	6.18	. .							
25 8 49 40.80	I.	11 3 29.30	30.74	1.44	. .	0.90	. .	N.	+ 2 55 37.77	44.27	+ 6.50		14 43.67	
y 29 14 9 15.59	II.	22 38 29.39	30.48	1.09	. .	8.76	. .	N.	— 5 37 11.26	10.11	+ 1.15		16 26.17	
g. 25 11 54 42.02		22 10 0.69	1.87	1.18	69.66	9.72	+0.06							
26 12 50 36.91	II.	23 10 1.10	2.04	0.94	. .	9.41	. .							
t. 20 8 41 21.33	I.	20 38 38.60	39.82	1.32	. .	9.29	. .							
. 16 5 37 26.56	I.	19 16 44.27	45.10	0.83	. .	7.61	. .	S.	17 0 54.17	48.93	+ 5 24	15 34.32	15 32.83	— 1.49
16 5 37 26.86	.	. . . .	. .	. .	. .	. .	. .	N.	17 0 48.03	48.93	— 0.90	15 34.32	15 33.26	— 1.06
20 9 11 19.98	I.	23 6 58.73	59.32	0.59	. .	8.75	. .	S.	— 3 24 47.90	43.72	+ 4.18	. .	16 28.95	
22 11 2 27.81	I.	1 6 17.92	19.57	1.65	. .	9.00	. .	S.	+ 6 16 11.64	16.68	+ 5.04	. .	41.33	
22 11 2 27.81	.	. . . .	. .	. .	. .	. .	. .		6 16 21.31	16.68	— 4.63	16 46.26	41.33	— 4.93
25 13 56 58.15	II.	4 13 6.58	7.57	0.99	. .	1.30	. .	N.	+16 49 9.22	6.64	— 2.58	. .	20.22	
v. 16 7 1 10.72	I.	22 42 55.04	55.98	0.94	. .	7.33	. .	N.	— 5 27 60.03	50.56	+ 9.47	. .	7.47	
17 7 53 34.09	I.	23 39 23.58	24.30	0.72	. .	7.79	. .							
20 10 38 52.43	.	. . . .	. .	. .	. .	. .	. .	S.	+12 28 57.50	61.61	+ 4.11	. .	30.61	
c. 18 9 22 9.41	I.	3 10 26.70	27.53	+0.83	. .	9.95	. .		+14 13 1.43	7.53	+ 6.10	. .	16.11	

MERCURY.

MEAN TIME—WASHINGTON. 1847.			Limb observed.	RIGHT ASCENSIONS.			SID. TIMES OF SEMI-DIAMETER PASSING.			Limb observed.	DECLINATIONS.			SEMI-DIAMET.	
				Observed.	Comp.	C—O.	Obs'd.	Comp.	C—O.		Observed.	Comp.	C—O.	Obs'd.	Comp.
		h. m. s.		h. m. s.	s.	s.	s.	s.	s.		° ′ ″	″	″	″	″
Mar.	5	1 5 30.5	I.	23 56 58.6	58.21	— 0.37	..	..	..	S.	— 0 5 4.88	3.45	+ 1.43	..	2.83
	6	1 7 29.5	I.	0 2 54.5	54.31	— .14	..	..	..	S.	+ 0 47 19.26	21.24	+ 1.98	..	2.89
Oct.	15	0 48 16.3	Center	14 22 49.7	49.76	+ .09	..	..	..	Center	—15 31 22.74	25.40	— 2.66	..	2.44
	16	0 49 58.0	I.	14 28 28.2	28.35	+ .12	..	..	..	N.	16 5 57.30	56.77	+ 0.53	2.14	2.46
	18	0 53 18.9	I.	14 39 42.7	42.86	+ .12	..	0.18	..	N.	17 12 23.95	27.12	— 3.17	2.51	2.50
	20	0 56 35.8	I.	14 50 53.6	53.47	— .11	..	.19	..	N.	18 15 22.46	24.26	1.80	2.68	2.55
	29	1 9 55.7	Center	15 39 44.3	44.51	+ .16	..	..	..	Center	22 8 40.06	41.02	0.96	..	2.83
Nov.	2	1 14 15.0	I.	15 59 50.5	50.15	— .40		.22		N.	23 21 34.65	36.80	2.15	3.15	3.01
Dec.	17	22 28 29.2	I.	16 14 59.1	58.90	— 0.25	..	0.20		N.	—19 29 30.03	31.74	— 1.71	2.70	2.93

VENUS.

Mar.	2	1 21 51.7	I.	0 1 32.81	32.93	+0.12	..	0.35	..	S.	— 1 7 0.82	58.15	+ 2.67	..	5.17
	6	1 24 7.9	I.	0 19 35.61	35.20	—0.41	..	.35	..	S.	+ 0 57 27.90	28.76	0.86	..	5.21
April	3	1 41 49.6	I.	2 27 43.71	44.93	+1.22	..	.39	..	N.	14 39 39.60	43.79	4.19	5.57	5.61
	5	1 43 26.2	I.	2 37 13.67	13.93	0.26	..	.39	..	S.	15 30 . .	58.76			
	7	1 45 5.8	I.	2 46 46.65	46.81	0.16	..	.39	..	N.	16 20 37.96	42.39	4.43	6.29	5.68
	9	1 46 48.9	I.	2 56 23.05	23.68	0.63	..	.39	..	N.	17 8 41.90	48.47	6.57	6.38	5.72
	13	1 50 28.8	I.	3 15 49.43	49.79	0.36	..	.40	..	N.	18 39 43.12	46.03	2.91	6.12	5.80
May	6	2 16 19.7	I	5 12 25.66	26.24	0.58	..	.47	..	N.	24 33 27.94	28.91	+ 0.97	6.49	6.39
	8	2 18 51.6	I.	5 22 51.13	51.31	0.18	..	.48	..	N.	24 48 24.86	22.65	— 2.21	6.92	6.45
	18	2 31 34.7	I.	6 15 1.86	2.18	0.42	..	.51	..	N.	25 20 52.43	51.13	1.30		6.80
	20	2 34 4.5	I.	6 25 25.14	25.78	0.64	..	0.51	..	N.	+25 18 56 38	52.69	3.69	5.71	6.87
Aug.	20	2 34 32.0	I.	12 28 35.89	36.21	+0.32	..	1.10	..	N.	— 6 58 34.86	37.68	— 2.82	..	16.84
	21	2 32 43.9	I.	12 30 44.05	43.51	—0.54	..	1.12							
	24	2 26 50.8	I.	12 36 39.66	39.06	0.60	..	1.18	..	N.	8 30 40.06	35.73	+ 4.33	18.04	17.90
	31	2 10 10.2	.	. . . .	. .	. .	..		..	N.	10 52 51.07	49.92	3.15	21.34	20.01
Sept.	22	0 40 53.4	I.	12 44 44.82	44.38	0.44	..	1.90	..	N.	13 46 44.81	24.57	20.24	29.16	27.72
Oct.	14	22 29 5.2	II.	12 3 15.73	14.94	0.79	..	1.88	..	N.	6 56 39.45	8.94	30.51	29.89	27.97
	15	22 24 15.0	II.	12 2 21.22	20.38	0.84	..	1.86	..	N.	6 35 57.51	35.55	21.96	28.62	27.68
	18	22 10 36.8	II.	12 0 30.42	29.19	1.23	..	1.80	..	N.	5 38 19.46	51.58	27.88	25.32	26.72
	20	22 2 14.6	II.	12 0 0.04	59.82	0.22	..	1.76	..	N.	5 4 14.59	44.09	30.50	24.73	26.03
	21	21 58 18.1	II.	11 59 59.34	58.58	0.76	..	1.74	..	N.	4 48 35.00	6.83	28.17	26.41	25.66
	24	21 47 19.4	II.	12 0 48.46	48.51	0.05	..	1.65							
	25	21 43 57.5	II.	12 1 22.63	21.51	1.12	..	1.63	..	N.	3 56 24.97	58.14	26.83	24.30	24.24
	27	21 37 37.5	II.	12 2 54.72	53.69	1.03	..	1.58	..	N.	3 36 49.67	19.76	29.91	24.80	23.51
	28	21 34 39.1	II.	12 3 52.36	51.78	0.58	..	1.55	..	N.	3 28 33.64	7.42	26.22	23.06	23.14
	29	21 31 49.1	II.	12 4 58.47	57.57	0.90	..	1.53	..	N.	3 21 22.99	59.97	23.02	22.95	22.79
Nov.	1	21 24 51.6	.	. . . .	. .	. .	..		..	S.	3 6 15.72	56.08	19.64	22.67	21.73
	2	21 21 40.0	II.	12 10 33.89	32.97	0.92	..	1.43	..	N.	3 3 19.84	57.95	21.89	22.06	21.74
	4	21 17 14.7	II.	12 14 1.01	0.96	—0.05	..	1.39	..	S.	— 3 0 22.61	0.84	+21.77	21.10	20.72

MARS.

Aug.	12	16 46 52.8	II.	2 11 44.29	43.05	— 1.24	..	—0.42	..	N.	+ 9 59 16.63	8.40	—8.23	7.72	6.25
Sept.	17	15 7 32.9	I.	2 54 3.94	2.50	1.44	..	+ .47	..	N.	13 36 32.25	26.68	—5.57	. .	8.27
Oct.	14	13 10 34.3	I.	2 43 13.07	11.41	1.66	..	.66	..	N.	13 42 52.95	58.06	+5.11	10.70	9.67
	20	12 39 34.4	I.	2 35 47.33	45.31	2.02	..	.67	..	N.	13 27 41.17	43.86	2.69	11.55	9.77
	25	12 3 2.4	I.	2 28 53.72	51.45	2.27	..	.67	..	N.	13 12 14.41	20.18	5.77	10.92	9.76
	26	12 7 39.2	.	. . . .	. .	. .	..	. .	..	S.	13 8 58.63	64.77	6.14	13.41	9.75
Nov.	5	11 14 26.1	.	2 13 29.93	27.70	2.23	0.97	.64	—0.39						
	16	10 18 53.9	I.	2 1 10.66	8.51	2.15	..	.29							
	17	10 14 4.6	.	*2 0 19.37	17.15	(2.22)	0.15	.59	+0.44	N.	12 10 25.84	31.94	6.46	11.38	8.86
	29	9 20 44.1	I.	1 54 5.99	3.45	2.54	..	.53	..	N.	12 12 27.04	34.54	7.50	8.86	7.71
Dec.	14	8 24 23.9	I.	1 56 45.43	44.14	1.29	..	.45	..	N.	12 59 19.08	25.42	6.34	9.04	6.53
	29	7 37 56.3	.	2 9 18.59	17.19	— 1.40	0.54	0.38	—0.16	. .	+14 26 27.46	35.16	+7.70	9.20	5.53

* Observed R diminished 5s.

FLORA.

MEAN TIME—WASHINGTON. 1847.	Limb observed.	RIGHT ASCENSIONS. Observed.	Comp.	C — O.	SID. TIMES OF SEMI-DIAMETERS PASSING. Obs'd.	Comp.	C—O.	Limb observed.	DECLINATIONS. Observed.	Comp.	C—O.	SEMI-DIAMETERS. Obs'd.	Comp.	C—O.
h. m. s.		h. m. s.	s.	s.	s.	s.	s.		° ′ ″	″	″	″	″	″
Nov. 29 12 5 6.0	..	*4 38 55.46	. .	. .	. .	. .	. .	. .	+13 59 17.75	. .	. . .			
Dec. 6 11 29 50.3	..	4 31 9.92	9.85	— 0.07	. .	. .	. .	. .	14 13 14.75	18.8	+ 4.05			
7 11 24 49.7	..	4 30 4.99	5.25	+ .26	. .	. .	. .	. .	14 15 43.69	45.1	1.41			
8 11 19 49.4	..	4 29 0.46	0.81	+ .35	. .	. .	. .	. .	14 18 12.71	18.0	5.29			
14 10 50 12.0	..	4 22 57.54	57.51	— .03	. .	. .	. .	. .	14 35 49.02	51.23	+ 2.21			
21 10 16 46.6	..	4 17 2.50	1.91	— 0.59	. .	. .	. .	. .	+15 1 15.99	15.27	— 0.72			

*Observed $\mathcal{R}$ diminished 5s.

IRIS.

Oct. 25 5 58 26.0	..	20 13 15.27	15.44	+ 0.07	. .	. .	. .	..	—13 52 30.74	31.54	— 0.80			
29 5 47 49.3	..	20 18 23.56	22.93	— 0.63	. .	. .	. .	..	13 41 19.57	29.72	10.15			
Nov. 2 5 37 30.9	..	20 23 49.74	48.57	— 1.17	. .	. .	. .	..	—13 28 37.32	40.49	— 3.27			

HEBE.

Aug. 11 7 36 4.2	..	16 55 28.55	. .	. .	. .	. .	. .	..	— 9 7 20.19					

JUPITER.

Jan. 5 9 23 49.9	II.	4 24 3.27	3.12	—0.15	. .	. .	..	N.	+20 58 14.07	17.30	+ 3.23	. .	21.70	
12 8 54 9.1	I.	4 21 53.23	53.32	+0.09	. .	1.64	..	N.	20 54 54.24	50.34	— 3.90	. .	21.32	
Feb. 23 6 10 17.3	I.	4 23 10.15	9.95	—0.20	. .	1.44	..	N.	21 7 17.79	12.85	— 4.94	. .	18.72	
Dec. 28 12 44 3.5	I.	7 12 20.59	19.57	—1.02	. .	1.71	..		+22 35 2.21	3.53	+ 1.32	21.69	21.88	+0.19

SATURN.

Aug. 12 13 28 45.9	I.	22 53 4.82	3.07	—1.75	. .	0.63	. .	N.	— 9 17 19.04	28.98	— 9.94	. .	8.63	. .
18 13 3 36.3	I.	22 51 30.45	29.69	0.76	. .	.63	. .	..	9 27 41.50	49.85	8.35	9.11	9.29	+ 0.18
26 12 29 58.5	I.	22 49 19.56	18.08	1.48	. .	.63	. .	..	9 41 52.92	4.16	11.24	10.05	9.32	— 0.73
29 12 17 19.8	I.	22 48 28.34	27.40	0.94	. .	.63								
Sept. 3 11 56 15.2	I.	22 47 3.08	2.18	0.90	. .	.63	. .	N.	9 56 10.52	23.55	13.03	. .	8.62	
6 11 43 37.2	I.	22 46 12.71	11.01	1.70	. .	.63	. .	N.	10 1 51.15	41.65	9.50	. .	8.62	
28 10 11 16.7	I.	22 40 21.18	19.82	1.36	. .	.63								
Oct. 14 9 5 7.9	I.	22 37 6.31	4.85	1.46	. .	.62	. .	..	10 54 30.58	37.76	7.18	8.66	9.06	+ 0.40
26 8 16 21.9	..	. . . .	. .	. .	. .	. . .	. .	..	11 2 16.69	23.70	7.01	10.89	8.90	— 1.99
29 8 4 19.9	I.	22 35 16.64	15.48	1.16	. .	.60	. .	..	11 3 23.71	29.72	6.01	8.59	8.86	+ 0.27
Nov. 11 7 12 46.5	..	22 34 49.95	48.38	1.57	0.57	.59	+ .02	..	11 4 7.02	11.64	4.62	9.87	8.68	— 1.19
17 6 49 19.4	..	*22 34 59.72	58.38	(1.34)	0.66	.59	— .07	..	11 2 6.51	15.60	9.09	9.22	8.59	0.63
29 7 3 2.3	I.	22 36 2.13	0.86	—1.27	. .	0.58	. .	..	—10 54 5.84	12.70	— 6.86	9.02	8.41	— 0.61

* Observed $\mathcal{R}$ increased 10s.

NEPTUNE.

MEAN TIME—WASHINGTON. 1847.			Limb Observed	RIGHT ASCENSIONS.			SID. TIMES OF SEMI-DIAMETERS PASSING.			Limb Observed	DECLINATIONS.			SEMI-DIAMETERS.		
				Observed.	Comp.	C — O.	Obs'd.	Comp.	C — O.		Observed.	Comp.	C — O.	Obs'd.	Comp.	C — O.
		h. m. s.		h. m. s.	s.	s.	s.	s.	s.		° ′ ″	″	″	″	″	″
July	27	13 46 34.8	..	22 7 51.78	52.20	+ 0.42										
Aug.	18	12 17 54.4	..	22 5 41.02	41.09	.07	. .	. .	. .	..	— 12 21 47.74	48.59	— 0.85			
	19	12 13 51.5	..	22 5 34.04	34.83	.79	. .	. .	. .	..	12 22 22.81	23.59	0.78			
	25	11 49 39.1	..	22 4 56.96	57.21	+ .25										
	26	11 45 37.3	..	22 4 51.01	50.95	— .06										
	29	11 33 30.3	..	22 4 31.73	32.24	+ .51	. .	. .	. .	..	12 28 9.23	11.47	— 2.24			
Sept.	4	11 19 19.4	..	22 3 56.15	55.32	— .83	. .	. .	. .	..	12 31 35.70	35.10	+ 0.60			
	6	11 1 14.6	..	22 3 43.18	43.23	+ .05	. .	. .	. .	..	12 32 38.85	41.54	— 2.69			
	26	9 40 46.5	..	22 1 52.84	53.18	.34	. .	. .	. .	..	12 42 39.99	40.04	0.05			
Oct.	11	8 40 44.6	..	22 0 49.39	50.35	+ .96	. .	. .	. .	..	12 48 14.68	15.46	0.78			
	18	8 12 56.0	..	22 0 29.00	28.80	— .20										
	26	7 41 7.9	..	22 0 11.16	11.05	.11	. .	. .	. .	..	12 51 39.99	40.01	0.02			
	27	7 37 10.3	..	22 0 9.43	9.37	— .06	. .	. .	. .	..	12 51 44.70	48.48	3.78			
	29	7 29 15.1	..	22 0 6.10	6.38	+ 0.28	. .	. .	. .	..	— 12 52 3.15	3.41	— 0.26			

RESULTS OF OBSERVATIONS

WITH

THE EQUATORIAL,

1847.

NATIONAL OBSERVATORY.

APPARENT PLACES OF NEPTUNE.

MEAN TIME—WASHINGTON.	COMPARISON-STAR.	α	δ	C — O.		No. of Comp.	Observer.
				$\Delta\alpha$	$\Delta\delta$		
h. m. s.		h. m. s.	° ′ ″	s.	″		
1847. Jan. 5 6 40 27.6	7648, B. A. C. . .	21 55 5.04	— 13 14 8.41	+ 0.23	+ 0.12	6	H.
"	Weisse XXI, 1220	55 5.33	14 7.00	— 0.06	— 1.29	6	
6 57 24.4	(1)	55 5.17	14 3.06	+ 0.19	— 4.79	2	
8 6 8 44.0	7648, B. A. C. . .	55 25.92	12 15.54	0.64	+ 0.02	3	
"	Weisse XXI, 1220	55 26.38	12 14.45	0.18	— 1.07	3	
6 23 4.9	(1)	55 26.33	12 9.72	0.30	5.41	7	
12 6 5 16.4	(1)	55 56.15	9 33.05	+ 0.05	5.50	7	
22 6 22 27.4	(1)	57 15.04	13 2 38.90	0.00	1.83	5	
27 6 27 6.6	(1)	21 57 57.04	12 59 0.68	— 0.58	0.58	2	
Mar. 24 17 25 35.7	7722, B. A. C. . .	22 5 54.11	16 42.50	— 0.02	2.75	5	
April 2 17 2 48.4	"	6 57.85	11 2.81	+ 0.68	1.26	3	
4 16 46 54.7	"	7 11.93	9 50.26	0.01	— 3.07	4	
6 16 36 7.6	"	7 24.96	8 43.20	0.06	+ 1.12	8	
16 38 14.3	Weisse XXII, 123	7 24.67	8 46.62	0 36	+ 2.36	5	
7 16 39 31.7	8722, B. A. C. . .	7 31.23	8 9.48	+ 0.26	— 0.81	10	
16 27 13.5	Weisse XXII, 123	7 31.65	8 16.59	— 0.21	+ 6.03	5	
9 16 37 20.2	7722, B. A. C. . .	7 43.38	7 2.91	+ 0.72	— 1.06	8	
16 32 11.6	Weisse, 123 . . .	7 43.98	7 4.08	0.09	— 0.01	7	
11 16 26 32.7	7722, B. A. C. . .	7 56.01	5 59.77	0.35	+ 0.08	3	
16 37 27.6	Weisse XXII, 123	7 56.02	12 6 0.48	0.38	+ 0.98	9	
30 15 42 56.7	7740, B. A. B. . .	9 32.25	11 57 39.49	0.09	— 1.12	6	
May 7 15 8 45.2	"	9 57.56	11 55 31.37	0.10	2.66	6	
16 14 47 20.8	"	10 20.93	11 53 34.87	+ 0.78	2.55	6	
June 6 14 20 27.3	"	10 38.90	11 52 40.50	— 0.05	1.61	5	
11 14 41 38.9	"	10 34.65	11 53 12.53	+ 0.21	1.09	5	
July 24 13 22 48.6	7722, B. A. C. . .	8 8.19	12 7 49.50	0.32	3.70	5	
Aug. 19 10 18 47.7	"	5 34.92	12 22 16.90	0.41	3.89	6	
1848. June 17 6 6 11.4	"	22 4 53.26	— 12 25 28.30	+ 0.19	— 0.43	6	

MEAN PLACES FOR 1850.0 OF STARS COMPARED WITH NEPTUNE.

STAR.	MAG.	α	δ	AUTHORITY.
		h. m. s.	° ′ ″	
7648, B. A. C. . .	7	21 50 18.90	— 13 22 49.09	All known observations.
Weisse XXI, 1220	9	21 52 0.64	13 25 5.60	Wash. Ob., vol. III.
(1)	9	21 58 45.38	13 14 20.96	Wash. Ob., 1853.
7722, B. A. C. . .	6	22 2 35.95	12 18 0.69	Wash. Ob., vol. III.
7740, B. A. C. . .	7	22 4 16.37	11 48 12.10	" "
Weisse XXII, 123	9	22 6 33.80	— 12 00 41.92	Weisse and Rumker.

APPARENT PLACES OF ASTRÆA.

MEAN TIME.—WASHINGTON.				COMPARISON STAR.	α	δ	No. of Comp.	Observer.
		h.	m.	s.	h. m. s.	° ′ ″		
1847. Feb.	1	16	41	3.1	28320 Lal. . . .	15 27 29.83	 8	H.
		16	46	41.0	"	. . . . . — 13 42 2.92	7	
	12	15	13	28.4	Weisse XV, 789 .	15 40 50.47	 7	
		15	21	39.7	"	. . . . . 14 3 13.84	10	
		15	30	12.7	"	15 40 51.49	 5	
		15	33	41.7	"	. . . . . 14 3 8.95	3	
April	6	14	0	53.4	Weisse XV, 173 .	16 7 23.13	12 57 44.28	5
		14	22	42.6	" 176 .	7 22.84	57 43.63	5
	7	13	4	39.6	" 173 .	7 8.64	54 30.44	6
		13	14	59.3	" 176 .	7 8.47	54 29.62	6
	9	14	35	37.6	" 173 .	6 32.11	47 22.56	6
	11	13	52	14.4	" 83 .	5 50.34	40 24.66	7
			"		" 121 .	5 50.91	40 25.01	7
		15	23	25.7	" 83 .	5 48.72	40 11.83	2
			"		" 121 .	4 49.39	40 11.24	2
	14	12	3	16.2	" 83 .	4 36.50	29 46.64	4
		12	36	48.4	5351, B. A. C. . .	4 34.54	29 38.57	3
		12	44	19.2	29414, Lal. . . .	4 34.45	29 36.93	3
	15	12	43	58.0	5351, B. A. C. . .	4 6.28	25 52.97	5
			"		29414, Lal. . . .	4 6.30	25 53.30	5
		14	28	29.1	5351, B. A. C. . .	4 3.96	25 37.67	5
			"		29414, Lal. . . .	4 3.86	25 36.60	5
		14	23	28.6	Weisse XVI, 83 .	4 5.14	25 42.03	4
	16	13	13	11.8	5351, B. A. C. . .	3 35.26	22 4.18	3
		13	44	8.7	29414, Lal. . . .	3 34.47	21 58.24	12
		13	44	29.7	Weisse XVI, 83 .	3 35.39	22 3.55	6
		14	16	23.2	5351, B. A. C. . .	3 33.69	21 53.25	3
	18	12	52	21.1	29414, Lal. . . .	2 28.92	14 24.07	11
	20	12	42	9.9	5351, B. A. C. . .	1 19.17	12 6 57.84	10
	22	13	16	7.3	Weisse XV, 1109 .	16 0 1.69	11 59 10.06	5
	26	13	21	48.4	"	15 57 11.03	43 41.11	5
		13	43	25.0	29208, Lal. . . .	57 10.05	43 38.05	5
	30	14	6	27.2	29208, Lal. . . .	54 1.25	28 18.85	6
May	5	13	19	3.7	5324, B. A. C. . .	49 46.23	9 53.99	6
	6	12	45	36.4	Weisse XV, 861 .	48 53.14	6 21.45	3
		13	1	7.1	" 976 .	48 53.87	6 21.62	3
	7	12	48	15.4	" 861 .	47 59.11	2 49.68	5
		13	13	21.1	" 976 .	47 58.86	11 2 46.34	5
	16	13	0	28.8	" 828 .	39 35.97	10 33 41.48	8
		13	5	16.8	28945, Lal. . . .	39 35.66	33 41.26	7
		13	34	23.7	28607, Lal. . . .	39 34.53	33 38.56	2
	17	12	51	16.5	28607, Lal. . . .	38 39.99	30 51.98	5
			"		Weisse XV, 828 .	38 39.65	10 30 50.82	5
June	6	13	16	4.2	5074, B. A. C. . .	21 48.80	9 56 14.78	5
	8	13	14	13.1	"	20 29.08	55 30.57	5
	11	13	36	8.0	"	18 37.73	55 20.56	9
	14	11	59	12.2	"	15 17 1.86	— 9 56 21.66	5

MEAN PLACES FOR 1850.0 OF STARS COMPARED WITH ASTRÆA.

STAR.	α	δ	AUTHORITY.
	h. m. s.	° ′ ″	
28320 Lal. . . .	15 25 42.19	— 13 43 12.13	Wash. Ob., vol. III.
Weisse XV, 789 .	15 41 11.88	14 4 34.66	"
Weisse XVI, 173 .	16 9 27.32	12 59 50.64	"
Weisse XVI, 176 .	16 9 36.66	13 4 11.67	"
Weisse XVI, 83 .	16 5 16.48	12 38 51.53	"
Weisse XVI, 121 .	16 6 45.83	12 50 33.21	"
5351, B. A. C. . .	15 59 16.67	12 20 13.55	"
29414, Lal. . . .	16 1 32.17	12 29 9.35	"
Weisse XV, 1109 .	15 58 15.76	12 4 50.18	"
29208, Lal. . . .	15 56 8.80	11 26 22.36	Lalande Cat.
29324, B. A. C. . .	15 56 7.71	10 57 17.91	All known observations.
Weisse XV, 976 .	15 51 22.48	10 49 49.92	Wash. Ob., vol. III.
Weisse XV, 861 .	15 44 45.82	11 22 50.44	Weisse Cat.
28945, Lal. . . .	15 45 59.97	10 38 29.94	Wichman A. N., 694.
Weisse XV, 828 .	15 42 45.35	10 31 57.53	Wash. Ob., vol. III.
28607, Lal. . . .	15 35 2.92	10 26 22.80	Rumker Cat.
29174, B. A. C. . .	15 6 4.34	— 9 46 44.59	All known observations.

APPARENT PLACES OF HEBE.

MEAN TIME.—WASHINGTON.		COMPARISON STAR.	α	δ	No. of Comp	Observer.
	h. m. s.		h. m. s.	° ′ ″		
1847. Aug. 10	9 4 10.3	Weisse XVI, 1033 .	16 55 17.37	— 8 58 42.20	4	H.
	9 36 47.2	"	55 17.84	8 58 57.77	2	K.
11	8 17 31.1	"	55 28.93	9 7 39.94	4	M.
	8 23 20.4	Weisse XVII, 83 .	55 28.40	9 7 41.62	3	
18	9 1 24.2	Weisse XVII, 3 .	57 39.49	10 12 2.76	7	
19	8 44 14.0	Weisse XVII, 3 .	58 4.51	10 21 6.57	5	
20	9 10 25.5	31078, Lal. . . .	58 30.88	10 30 20.54	7	
	"	Weisse XVII, 3 .	16 58 31.49	10 30 22.99	7	
25	10 50 27.2	Weisse XVII, 18 .	17 1 12.23	11 16 24.81	2	
30	7 49 59.2	Weisse XVI, 1139 .	4 24.16	12 0 7.34	5	
Sept. 1	9 11 13.6	Weisse XVII, 155 .	5 55.68	12 18 17.53	5	
	"	Weisse XVII, 179 .	5 55.31	12 18 19.57	5	
3	8 7 28.4	Weisse XVII, 168 .	7 27.85	12 35 24.21	8	
	8 18 7.5	Weisse XVII, 65 .	7 29.02	12 35 27.32	2	
	8 32 23.4	Weisse XVII, 13 .	7 28.93	12 35 30.66	4	
4	8 41 56.9	5845, B. A. C. . .	8 16.82	12 43 55.07	5	
6	8 11 5.3	"	10 1.70	13 1 18.50	5	
10	8 30 20.5	(10)	13 13.9	13 34 34.6	4	
	8 34 16.0	(9)	13 13.9	13 34 34.6	3	
13	7 59 53.6	Weisse XVI, 360 .	16 45.40	14 0 0.25	3	
14	8 55 25.9	Weisse XVI, 360 .	17 50.62	14 8 39.67	5	
15	8 8 30.6	Weisse XVI, 366 .	18 52.86	14 16 16.73	4	
	8 24 46.4	Weisse XVI, 397 .	18 53.48	14 16 20.60	5	
16	7 52 0.2	Weisse XVI, 397 .	19 56.92	14 24 11.75	6	
17	7 53 48.8	Weisse XVI, 464 .	21 3.78	14 32 7.14	4	
	7 54 35.1	Weisse XVI, 392 .	21 4.32	14 32 11.15	6	
20	7 29 18.9	(13)	24 24.5	14 55.5	4	
21	7 34 3.6	(13)	25 25.7	15 3.1	4	
	7 36 32.0	5949, B. A. C. . .	25 42.04	15 3 9.77	6	
22	7 33 49.2	"	17 26 54.53	— 15 10 41.32	7	

MEAN PLACES FOR 1850.0 OF STARS COMPARED WITH HEBE.

STARS.	α	δ	AUTHORITY.
	h. m. s.	° ′ ″	
Weisse XVI, 1033 .	16 54 18.57	— 9 3 39.08	Wash. Ob., vol. III.
Weisse XVII, 83 .	17 5 24.63	9 6 2.02	" "
Weisse XVII, 3 .	17 1 30.74	10 19 21.49	Weisse Cat.
31078, Lal. . . .	16 58 12.27	10 35 52.02	Lalande Cat.
Weisse XVII, 18 .	17 2 28.55	11 33 24.81	Weisse Cat.
Weisse XVI, 1139 .	17 0 3.98	11 49 55.61	Madrass Observations.
Weisse XVII, 155 .	9 28.15	12 8 43.74	Weisse Cat.
Weisse XVII, 168 .	10 14.37	12 26 38.73	" "
Weisse XVII, 179 .	10 40.23	12 19 26.38	" "
Weisse XVII, 13 .	2 19.40	12 30 18.74	" "
Weisse XVII, 65 .	4 49.61	12 32 36.73	" "
5845, B. A. C. . .	12 23.66	12 41 20.40	B. A. Cat.
Weisse XVII, 360 .	20 36.67	13 57 9.78	Weisse Cat.
Weisse XVII, 366 .	20 47.84	14 7 51.48	" "
Weisse XVII, 397 .	22 9.94	14 17 11.35	" "
Weisse XVII, 392 .	21 59.45	14 39 1.69	" "
Weisse XVII, 464 .	24 15.05	14 40 35.31	Weisse and Piazzi.
5949, B. A. C. . .	17 29 0.05	— 15 17 56.20	B. A. Cat.

APPARENT PLACES OF IRIS.

MEAN TIME.—WASHINGTON.	COMPARISON STAR.	α	δ	No. of Comp.	Observer.
h. m. s.		h. m. s.	° ′ ″		
7. Oct. 3 8 9 1.01	Weisse XIX, 1259	19 51 33.07	— 14 24 23.61	5	H.
7 48 6.45	Weisse XIX, 1319	19 51 33.40	14 24 22.50	9	
25 6 31 20.21	Weisse XX, 284 .	20 13 17.15	13 52 30.08	5	
26 6 28 55.17	Weisse XX, 284 .	20 14 32.21	13 49 52.11	4	
27 6 00 45.65	Weisse XX, 387 .	20 15 47.46	13 47 10.23	9	
28 6 2 33.63	Weisse XX, 387 .	20 17 5.28	13 44 21.75	6	
29 5 54 53.47	Weisse XX, 387 .	20 18 24.01	13 41 21.46	5	
Nov. 2 6 38 58.22	Weisse XX, 545 .	20 23 53.65	13 28 26.50	11	
3 6 4 12.77	Weisse XX, 545 .	20 25 15.99	13 25 1.63	5	
5 6 28 27.53	Weisse XX, 779 .	20 28 9.51	13 17 40.33	7	
11 7 8 12.87	Weisse XX, 923 .	20 37 12.76	12 52 46.10	6	
17 7 46 12.79	7242, B. A. C. . .	20 46 48.78	12 23 31.04	5	
20 7 20 20.56	7296, B. A. C. . .	20 51 45.67	12 7 14.08	4	
Dec. 18 7 19 3.54	42558, Lal. . . .	21 44 2.04	— 8 38 45.13	4	

MEAN PLACES FOR 1850.0 OF STARS COMPARED WITH IRIS.

STARS.	α	δ	AUTHORITY.
	h. m. s.	° ′ ″	
isse XX, 1259 .	19 49 59.89	— 14 24 32.45	α From Weisse Cat., δ from Wash. Ob.,
isse XIX, 1319	19 52 41.40	14 20 52.89	Wash. Ob., vol. III. [Vol III.]
isse XX, 268 .	20 11 23.90	13 15 9.93	Wash. Ob., vol. III.
isse XX, 284 .	20 12 3.04	13 49 7.95	α From Weisse—δ Wash. Ob., vol. III.
isse XX, 387 .	20 15 45.59	13 52 27.14	Wash. Ob.
isse XX, 545 .	20 21 56.52	13 31 28.16	Weisse Cat. and Wash. Ob., vol. III.
isse XX, 779 .	20 30 30.94	13 10 44.14	Wash. Ob.
isse XX, 923 .	20 35 56.73	12 50 7.93	Weisse Cat.
2, B. A. C. . .	20 44 52.94	12 8 14.30	B. A. Cat.
6, B. A. C. . .	20 53 48.56	12 16 48.63	B. A. Cat. and Rumker Cat.
58, Lal. . . .	21 42 46.16	— 8 53 30.07	Lalande Catalogue.

APPARENT PLACES OF FLORA.

MEAN TIME.—WASHINGTON.	COMPARISON STAR.	α	δ	No. of Comp.	Observer.
h. m. s.		h. m. s.	° ′ ″		
7. Dec. 3 13 25 15.49	Weisse IV, 733 .	4 34 23.10	+ 14 6 42.97	6	M.
4 6 46 39.33	Weisse IV, 824 .	4 33 34.73	14 8 16.73	2	
6 8 0 16.99	Weisse IV, 824 .	4 31 19.36	14 12 52.92	4	
8 3 21.45	Weisse IV, 794 .	4 31 18.95	+ 14 12 53.13	4	

MEAN PLACES FOR 1850.0 OF STARS COMPARED WITH FLORA.

STARS.	α	δ	AUTHORITY.
	h. m. s.	° ′ ″	
eisse IV, 733 .	4 33 36.25	+ 14 2 3.19	Wash. Ob., vol. III. Weisse, Ru. Cat's
eisse IV, 824 .	4 38 4.26	14 15 12.62	Wash. Ob., vol. III. Weisse Cat.
eisse IV, 794 .	4 36 15.05	+ 14 20 36.70	Wash. Ob., vol. III. Weisse, Ru. Cat's.

CATALOGUE OF STARS

OBSERVED IN 1847.

NATIONAL OBSERVATORY.

	RIGHT ASCENSION. 1850.0.		No. of Obs.	Inst.	DECLINATION. 1850.0.		No. of Obs.
	h m s.	s.			° ′ ″	″	
	1 1 7.57	..	1	P.	+ 37 53 15.12		1
	1 1 38.53	± 0.019	13	M.	+ 28 15 42.93	± 0.26	7
	38.61	± 0.018	25	C.	44.12	± 0.44	17
	38.60	..	5	P.	44.19		5
	1 5 30.92	± 0.017	13	M.	+ 14 20 58.38	± 0.19	4
	30.94	± 0.020	18	C.	58.07	± 0.28	17
	0 10 30.22	..	1	P.	+ 35 17 12.71	..	1
	0 13 14.05	..	2	P.	+ 37 8 14.33	..	2
	0 15 3.38	..	3	P.	+ 37 55 18.85	..	3
	0 17 58.06	..	1	..	+ 6 52	..	..
	0 20 59.93	..	1	P.	+ 36 4 11.05	..	1
	0 21 53.87	..	1	P.	+ 37 29 52.65	..	1
	0 22 23.01	..	1	..	— 4 47	..	..
	0 23 24.63	..	1	P.	+ 38 9 5.59	..	1
	0 24 42.90	..	1	P.	+ 38 0 58.20	..	1
	0 27 8.91	..	1	P.	+ 36 0 17.77	..	1
	0 27 50.63	..	1	..	— 1 20	..	..
	0 28 3.89	..	1	P.	+ 37 25 32.24	..	1
	0 29 20.13	..	1	P.	+ 34 34 25.20	..	1
	0 30 24.57	..	1	..	— 1 20	..	..
	0 30 37.97	..	1	..	+ 28 30	..	..
	0 31 18.90	..	2	P.	+ 30 2 23.64	..	2
	0 32 1.49	± 0.040	13	M.	+ 55 42 49.58	± 0.13	12
	1.62	± 0.023	17	C.	48.26	± 0.37	16
	0 36 3.36	± 0.017	10	M.	— 18 48 38.54	..	2
	3.44	± 0.038	4	C.	37.42	± 0.78	5
	0 40 39.71	..	1	..	— 1 18	..	..
	0 40 58.57	..	1	C.	+ 6 49 2.84	..	1
	0 41 50.07	..	1	..	+ 26 54	..	..
Lalande, 1414	0 44 43.39	..	1	P.	+ 38 13 15.04	..	1
Lalande, 1492	0 46 1.01	..	3	P.	+ 38 15 10.08	..	3
Lalande, 1504	0 46 22.35	..	1	P.	+ 38 21 17.68	..	1
Andromedæ	0 48 26.25	..	1		. . .	..	..
	26.66	..	1	P.	+ 37 41 4.23	..	1
Lalande, 1627	0 49 46.35	..	4	P.	+ 36 41 15.48	..	4
Lalande, 1702	0 52 4.29	..	1	P.	+ 34 52 51.16	..	1
Piscium	0 55 9.82	..	1	C.	+ 7 4 51.94	..	1
Piscium, (311)	0 58 3.71	..	1	..	+ 4 7	..	..
Piscium, (312)	0 58 5.93	..	1	..	+ 4 7	..	..
Lalande, 2027	1 1 20.21	..	1	P.	+ 37 19 25.27	..	1
Andromedæ	1 1 21.00	..	2	P.	+ 34 49 27.47	..	2
Andromedæ, (343)	1 2 45.34	..	2	P.	+ 36 55 28.79	..	2
Weisse I. 40	1 3 36.30	..	3	M.	— 2 47 7.61	..	2
Polaris	1 5 0.39	± 0.332	22	M.	+ 88 30 34.70	± 0.13	19
S. P.	0.79	± 0.204	33	M.	35.60	± 0.11	9
	2.01	± 0.365	31	C.	33.73	± 0.18	32
S. P.	1.51	± 0.131	26	C.	35.72	± 0.29	24
Weisse I, 72	1 5 42.38	..	1	M.	— 2 39 20.71	..	2
ζ Piscium	1 5 53.71	..	1	..	+ 6 47	..	..
Piscium, (369)	1 5 55.19	..	1	..	+ 6 47	..	..
Weisse I, 88	1 6 26.24	..	1	..	— 2 55	..	..
Weisse I, 91	1 6 35.98	..	1	..	— 2 59	..	..
Lalande, 2330	1 10 17.91	..	3	P.	+ 36 35 42.49	..	3
Weisse I, 225	1 14 10.09	..	3	M.	— 2 47 3.48	..	2
Weisse I, 227	1 14 32.69	..	2	..	— 2 41	..	..

No.	NAME.	Inst.	RIGHT ASCENSION. 1850.0.	No. of Obs.	Inst.	DECLINATION. 1850.0.	No. of Obs.
			h. m. s. s.			° ′ ″ ″	
47	ϑ^1 Ceti	T.	1 16 31.57 ± 0.014	12	M.	− 8 57 31.66 ± 0.24	4
..		C.	31.59 ± 0.044	6	C.	28.49 ± 0.53	5
48	Lalande, 2936	P.	1 28 48.56 ..	1	P.	+ 37 44 55.15 ..	1
49	Lalande, 3025	P.	1 31 18.35 ..	1	P.	+ 38 12 25.86 ..	1
50	Weisse I, 564	T.	1 32 0.97 ..	2	M.	− 3 16 51.19 ..	2
51	Anonymous	P.	1 32 14.69 ..	1	P.	+ 37 30 14.33 ..	1
52	Weisse I, 594	T.	1 33 9.56 ..	3	M.	− 3 22 53.25 ..	2
53	Andromedæ (516)	P.	1 33 24.08 ..	1	P.	+ 34 29 11.39 ..	1
54	Anonymous	P.	1 38 1.32 ..	1	P.	+ 37 59 47.88 ..	1
55	Weisse I, 715	T.	1 39 27.47 ..	3	M.	− 3 51 57.67 ..	2
56	Weisse I, 725	T.	1 39 56.44 ..	3	..	− 3 40 ..	..
57	Weisse I, 727	T.	1 40 2.98 ..	3	M.	− 3 59 36.73 ..	1
58	Weisse I, 813	T.	1 45 11.07 ..	3	M.	− 3 51 37.16 ..	1
59	γ^1 Arietis	C.	1 45 18.35 ..	1	C.	+ 18 33 24.29 ..	1
60	Andromedæ (576)	P.	1 46 6.95 ..	1	P.	+ 36 23 20.66 ..	1
61	Arietis, (609)	T.	1 51 24.48 ..	1	M.	+ 11 33 54.24 ..	1
62	Weisse I, 942	T.	1 52 40.49 ..	3	M.	− 4 5 50.02 ..	1
63	Weisse I, 1048	T.	1 58 42.71 ..	1	..	− 5 5 ..	..
64	α Arietis	T.	1 58 43.61 ± 0.018	11	M.	+ 22 45 2.35 ± 0.16	7
..		C.	43.55 ± 0.019	15	C.	3.69 ± 0.25	13
..		P.	43.80 ..	5	P.	3.24 ..	5
65	Weisse I, 1069	T.	1 59 29.70 ..	1	M.	− 4 56 2.06 ..	2
66	β Trianguli	P.	2 0 37.86 ..	2	P.	+ 34 16 31.02 ..	2
67	Andromedæ (661)	P.	2 1 47.89 ..	1	P.	+ 38 19 44.85 ..	1
68	Andromedæ (662)	P.	2 1 48.75 ..	1	P.	+ 38 19 58.66 ..	1
69	Arietis, 683	..	2 4	..	M.	− 14 34 26.22 ..	1
70	Weisse II, 120	T.	2 8 23.17 ..	2	M.	− 4 47 35.00 ..	3
71	γ Trianguli	P.	2 8 24.44 ..	3	P.	+ 33 9 2.68 ..	3
72	Weisse II, 159	T.	2 10 42.67 ..	2	M.	− 4 47 38.71 ..	3
73	Weisse II, 155	T.	2 10 44.24 ..	1	..	+ 12 18 ..	..
74	Anonymous	T.	2 11 46.22 ..	1	..	− 4 50 ..	..
75	Weisse II, 214	..	2 14 5 ..	..	M.	+ 12 29 38.33 ..	1
76	Weisse II, 288	T.	2 17 26.30 ..	1	M.	− 5 25 40.78 ..	1
77	Weisse II, 379	..	2 22 38 ..	..	M.	+ 12 45 50.44 ..	1
78	Trianguli (772)	P.	2 22 57.48 ..	1	P.	+ 35 28 41.84 ..	1
79	Lalande, 4667	P.	2 23 43.23 ..	4	P.	+ 36 40 9.32 ..	4
80	Weisse II, 442	T.	2 26 39.10 ..	1	..	− 6 18 ..	..
81	Weisse II, 443	..	2 26 39 ..	..	M.	− 6 17 49.30 ..	3
82	Lalande, 4761	P.	2 26 42.67 ..	1	P.	− 36 23 56.20 ..	1
83	Weisse II, 475	..	2 28 5 ..	..	M.	− 6 19 44.40 ..	2
84	Arietis, (798)	..	2 28 27 ..	..	M.	+ 11 47 40.52 ..	2
85	Weisse II, 566	..	2 32 39 ..	..	M.	− 6 19 37.84 ..	1
86	γ Ceti	T.	2 35 31.93 ± 0.025	7	M.	+ 2 36 3.75 ± 0.25	8
..		C.	31.98 ± 0.032	11	C.	2.61 ± 0.45	11
87	Lalande, 5712	P.	2 38 6.21 ..	1	P.	+ 37 9 33.82 ..	1
88	Lalande, 5181	P.	2 40 15.67 ..	1	P.	+ 36 10 52.89 ..	1
89	Persei (877)	P.	2 42 17.30 ..	1	P.	+ 34 26 20.54 ..	1
90	Persei (888)	P.	2 44 15.41 ..	1	P.	+ 37 43 23.36 ..	1
91	Weisse II, 789	..	2 45 42 ..	..	M.	+ 13 36 11.79 ..	2
92	Anonymous	P.	2 48 32.49 ..	1	P.	+ 38 0 29.88 ..	1
93	Anonymous	P.	2 49 16.54 ..	2	P.	+ 38 11 46.30 ..	2
94	Persei (915)	P.	2 49 46.87 ..	1	P.	+ 34 34 42.24 ..	1
95	α Ceti	T.	2 54 26.58 ± 0.020	10	M.	+ 3 29 52.67 ± 0.13	5
..		C.	26.60 ± 0.024	13	C.	53.88 ± 0.38	12

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184	Geminorum (2504)	P.	7 28 41.74	..	1	P.	+ 35 22 47.26	..	1
185	Lalande, 14865	..	7 30 8	..	..	P.	+ 38 40 56.82	..	2
186	α Canis Minoris	T.	7 31 26.80	± 0.018	6	M.	+ 5 36 20.81	± 0.30	5
...		C.	26.84	± 0.035	10	C.	20.79	± 0.71	8
187	β Geminorum	T.	7 36 7.80	± 0.017	7	M.	+ 28 23 1.82	± 0.28	5
...		C.	7.83	± 0.054	5	C.	1.09	± 0.57	5
188	Lalande, 15196	P.	7 41 18.14	..	2	P.	+ 37 27 26.10	..	2
189	Lalande, 15235	P.	7 42 21.60	..	2	P.	+ 36 38 54.28	..	2
190	15 Argus	T.	8 1 9.41	..	4	M.	— 23 52 29.98	..	3
...		C.	9.42	± 0.074	6	C.	30.96	± 0.65	5
191	Lalande, 16413	P.	8 15 27.71	..	1	P.	+ 35 29 34.27	..	1
192	Lyncis (2855)	P.	8 23 0.30	..	2	P.	+ 38 31 36.20	..	2
193	Lalande, 17182	..	8 36 0	..	..	P.	+ 37 50 1.02	..	2
194	ε Hydræ	T.	8 38 49.73	± 0.015	7	M.	+ 6 57 56.93	± 0.34	4
...		C.	49.58	± 0.040	7	C.	57.15	± 0.34	5
195	Lalande, 17605	..	8 48 11	..	..	P.	+ 38 50 5.63	..	1
196	ι Ursæ Majoris	T.	8 48 54.67	..	3	M.	+ 48 37 35.65	± 0.20	4
...		C.	54.76	± 0.069	7	C.	33.22	± 0.26	5
197	Lalande, 18288	P.	9 9 10.68	..	2	P.	+ 35 59 26.26	..	2
198	Lyncis (3162)	P.	9 9 29.90	..	3	P.	+ 37 26 2.61	..	3
199	Lalande, 18362	..	9 11 33	..	..	P.	+ 38 49 12.11	..	1
200	α Lyncis	P.	9 11 54.59	..	1	P.	+ 35 1 25.36	..	1
201	Hydræ, (3184)	T.	9 12 33.18	..	1	..	— 11 21	..	..
202	α Hydræ	T.	9 20 12.92	± 0.015	11	M.	— 8 0 38.78	± 0.28	4
...		C.	12.93	± 0.022	6	C.	40.36	± 0.81	7
203	ϑ Ursæ Majoris	..	. . .	..	..	M.	+ 52 21 28.35	..	3
...		C.	9 22 47.48	..	3	C.	28.09	..	3
204	Leonis Minoris (3261)	P.	9 25 1.18	..	2	P.	+ 37 3 38.08	..	2
205	o Leonis	C.	9 33 9.41	..	1	C.	+ 10 34 29.81	..	1
206	ε Leonis	T.	9 37 19.68	± 0.015	12	M.	+ 24 27 44.29	± 0.14	7
...		C.	19.76	± 0.044	10	C.	45.28	± 0.32	11
207	Leonis Minoris (3364)	P.	9 43 15.07	..	2	P.	+ 38 36 56.64	..	2
208	Leonis Minoris (3446)	P.	9 58 34.26	..	2	P.	+ 35 58 25.11	..	2
209	α Leonis	T.	10 0 22.66	± 0.048	10	M.	+ 12 41 54.56	± 0.23	7
...		C.	22.68	± 0.030	13	C.	54.90	± 0.26	11
210	Sextantis, (3550)	T.	10 15 47.64	..	1	..	— 0 9	..	..
211	Lalande (20169)	P.	10 16 47.91	..	2	P.	+ 36 57 51.94	..	2
212	Sextantis, (3563)	T.	10 18 16.33	..	1	..	— 6 18	..	..
213	β Leonis Minoris	P.	10 19 11.92	..	2	P.	+ 37 28 26.60	..	2
214	Anonymous	C.	10 21 53.25	..	1	C.	+ 37 46 8.09	..	1
215	Sextantis, (3603)	T.	10 23 28.51	..	1	..	— 6 52	..	..
216	ρ Leonis,	T.	10 24 54.38	..	1	..	. . .	..	..
...		C.	54.56	..	1	C.	+ 10 4 42.24	..	1
217	Leonis Minoris (3625)	P.	10 27 44.34	..	2	P.	+ 37 6 11.08	..	2
218	Anonymous	P.	10 29 21.39	..	1	P.	+ 34 8 23.28	..	1
219	Leonis (3649)	T.	10 31 50.77	..	1	..	+ 9 37	..	..
220	Sextantis, (3684)	T.	10 37 25.59	..	1	..	+ 3 17	..	..
221	o¹ Sextantis	C.	10 38 16.89	..	1	C.	+ 7 9 49.85	..	1
222	Lalande, 20783	P.	10 39 51.94	..	2	P.	+ 38 21 37.12	..	2
223	Leonis Minoris, (3736)	P.	10 46 37.29	..	2	P.	+ 34 50 3.12	..	2
224	Leonis Minoris, (3741)	P.	10 47 25.38	..	2	P.	+ 34 18 23.38	..	2
225	Lalande, 21081	P.	10 51 10.18	..	1	P.	+ 36 53 51.20	..	1
226	α Ursæ Majoris	T.	10 54 25.68	± 0.058	10	M.	+ 62 33 34.96	..	3
...		C.	25.60	± 0.021	7	C.	32.93	± 0.24	8
...	S. P.	..	. . .	..	..	M.	35.15	..	2
227	Anonymous	P.	10 59 19.34	..	2	P.	+ 37 35 47.56	..	2

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228	Ursæ Majoris, (3811) . .	P.	11 1 3.50 ..	2	P.	+ 37 7 19.84 ..	2
229	Lalande, 21418	P.	11 4 22.19 ..	2	P.	+ 36 38 5.18 ..	2
230	Lalande, 21421	P.	11 4 31.79 ..	2	P.	+ 36 38 41.83 ..	2
231	δ Leonis	T.	11 6 7.38 ± 0.011	12	M.	+ 21 20 41.79 ± 0.14	4
...	. . . . .	C.	7.42 ± 0.032	12	C.	42.89 ± 0.25	11
232	δ Hydræ et Crateris . . .	T.	11 11 50.62 ± 0.026	11	M.	— 13 58 1.51 ± 0.15	4
...	. . .	C.	50.56 ..	3	C.	2.15 ..	2
233	Anonymous	P.	11 19 39.57 ..	1	P.	+ 32 32 1.55 ..	1
234	Leonis, (3901)	T.	11 20 13.95 ..	1	..	— 0 53 ..	1
235	Lalande, 21902	P.	11 24 11.49 ..	1	P.	+ 37 4 32.91 ..	1
236	Lalande, 21947	P.	11 25 57.11 ..	2	P.	+ 37 38 45.69 ..	2
237	Lalande, 22059	P.	11 30 36.77 ..	2	P.	+ 34 27 24.08 ..	2
238	Leonis, (3955)	T.	11 31 44.04 ..	2	..	— 1 36 ..	2
239	Ursæ Majoris, (3965) . .	P.	11 33 8.56 ..	2	P.	+ 35 2 55.24 ..	2
240	β Leonis	T.	11 41 24.25 ± 0.015	11	..	. . . . ..	..
...	. . . . .	C.	24.31 ± 0.021	14	C.	+ 15 24 38.02 ± 0.23	11
241	Lalande, 22357	P.	11 43 17.38 ..	2	P.	+ 37 40 10.25 ..	2
242	Ursæ Majoris, (4010) . .	..	11 44 19 ..	..	P.	+ 38 47 41.04 ..	..
243	γ Ursæ Majoris	T.	11 45 54.94 ± 0.019	8	M.	+ 54 31 43.05 ± 0.08	5
...	. . . .	C.	55.07 ± 0.064	8	C.	42.15 ± 0.47	7
244	Lalande, 22450	P.	11 47 28.59 ..	1	P.	+ 37 35 34.68 ..	1
245	Lalande, 22485	P.	11 48 32.86 ..	3	P.	+ 36 16 57.61 ..	3
246	Lalande, 22548	P.	11 51 4.03 ..	1	P.	+ 33 58 59.83 ..	1
247	Lalande, 22574	P.	11 52 26.75 ..	2	P.	+ 37 33 53.74 ..	2
248	Lalande, 22577	P.	11 52 34.01 ..	2	P.	+ 37 34 7.93 ..	2
249	Lalande, 22612	P.	11 53 58.35 ..	3	P.	+ 36 52 50.69 ..	3
250	Groombridge, 1850 . . .	C.	11 57 4.99 ..	1	C.	+ 86 24 58.57 ..	1
251	Virginis, (4080)	T.	11 59 33.97 ..	1	..	— 5 56 ..	1
252	Lalande, 22934	P.	12 6 33.05 ..	1	P.	+ 33 37 8.90 ..	1
253	Lalande, 22934 (a) . . .	P.	12 6 35.30 ..	1	P.	+ 33 37 7.87 ..	1
254	γ Corvi	T.	12 8 5.76 ..	1	..	— 16 43 ..	1
255	Canum Venat. (4128) . .	P.	12 8 57.34 ..	1	P.	+ 33 54 1.20 ..	1
256	γ Virginis	C.	12 10 58.94 ..	1	C.	+ 0 5 47.06 ..	1
257	Groombridge, 1871 . . .	C.	12 12 23.58 ..	1	C.	+ 87 16 8.34 ..	1
258	Lalande, 23117	..	12 12 44. ..	..	P.	+ 38 44 8.94 ..	1
259	Corvi (4173)	T.	12 15 33.25 ..	1	..	— 24 0 ..	..
260	Lalande, 23269	P.	12 18 58.70 ..	2	P.	+ 37 56 41.38 ..	2
261	β Corvi, ...	T.	12 26 30.87 ± 0.019	15	M.	— 22 33 59.75 ..	2
...	. . . . .	C.	30.93 ± 0.040	4	C.	60.79 ..	3
262	Lalande, 23537	P.	12 27 50.88 ..	2	P.	+ 37 15 11.92 ..	2
263	Lalande, 23653	P.	12 31 58.84 ..	2	P.	+ 36 46 38.60 ..	2
264	Lalande, 23666	P.	12 32 50.58 ..	2	P.	+ 34 59 26.80 ..	2
265	Lalande, 23711	P.	12 35 2.74 ..	1	P.	+ 34 31 1.14 ..	1
266	Lalande, 23896	P.	12 41 19.01 ..	1	P.	+ 37 9 42.43 ..	1
267	Lalande, 23919	P.	12 42 3.89 ..	1	P.	+ 36 8 26.85 ..	1
268	Canum Venat. (4311) . .	P.	12 43 2.38 ..	1	P.	+ 38 20 3.37 ..	1
269	Canum Venat. (4345) . .	C	12 48 58.57 ..	1	C.	+ 39 7 31.17 ..	1
270	12 Canum Venat.	T.	12 49 0.19 ..	1	M.	+ 39 7 46.89 ..	1
...	. . . .	C.	0.14 ± 0.044	4	C.	46.92 ..	4
271	Lalande, 24271 . . .	P.	12 55 21 ..	1	P.	+ 38 9 19.93 ..	1
272	Canum Venat. (4384) . .	P.	12 58 43.32 ..	1	P.	+ 36 36 9.37 ..	1
273	Canum Venat. (4407) . .	P.	13 2 43.30 ..	2	P.	+ 38 13 27.01 ..	2
274	Lalande, 24579	P.	13 6 40.90 ..	2	P.	+ 37 41 4.20 ..	2
275	Lalande, 24615	P.	13 8 12.79 ..	1	P.	+ 36 14 26.51 ..	1

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276	Anonymous	P.	13 10 18.73 ..	1	P.	+ 33 17 2.68 ..
277	α Virginis	T.	13 17 17.74 ± 0.019	18	..	. . . . ..
...	. . . . .	C.	17.76 ± 0.080	6	C.	— 10 22 34.62 ..
278	Canum Venat. (4536) . .	P.	13 28 5.57 ..	2	P.	+ 37 57 10.77 ..
...	. .	T.	5.78 ..	3	..	. . . . ..
279	Canum Venat. (4552) . .	P.	13 30 47.53 ..	2	P.	+ 37 3 33.04 ..
...	. .	T.	47.58 ..	2	..	. . . . ..
280	Anonymous	P.	13 36 2.12 ..	2	P.	+ 35 44 48.35 ..
281	Canum Venat. (4595) . .	T.	13 39 49.05 ..	2	..	+ 39 15 . . ..
282	η Ursæ Majoris	T.	13 41 37.50 ± 0.013	29	M.	+ 50 3 48.74 ..
...	. . . .	C.	37.50 ± 0.039	10	C.	47.28 ± 0.51
283	Canum Venat. (4632) . .	P.	13 45 10.31 ..	1	P.	+ 35 11 23.01 ..
284	η Bootis	T.	13 47 32.46 ± 0.012	29	M.	+ 19 9 6.88 ..
...	. . . . .	C.	32.53 ± 0.032	10	C.	5.83 ± 0.35
285	Lalande, 25625	P.	13 48 8.90 ..	2	P.	+ 37 48 54.24 ..
286	Lalande, 25860	P.	13 58 3.45 ..	2	P.	+ 35 8 38.52 ..
287	Lalande, 26013	P.	14 3 25.52 ..	2	P.	+ 38 2 27.30 ..
288	Bootis, (4714)	P.	14 4 42.60 ..	1	P.	+ 33 0 11.23 ..
289	κ Virginis	T.	14 4 53.93 ..	1	..	— 9 34 . . ..
290	α Bootis	T.	14 8 49.20 ± 0.013	33	M.	+ 19 57 56.39 ± 0.21
...	. . . . .	C.	49.17 ± 0.019	28	C.	57.24 ± 0.15
...	. . . . .	P.	49.31 ..	4	P.	57.93 ..
291	Anonymous	P.	14 10 22.54 ..	1	P.	+ 38 26 57.70 ..
292	Bootis, (4778)	P.	14 17 16.00 ..	1	P.	+ 37 53 18.23 ..
293	Bootis, (4783)	T.	14 19 21.70 ± 0.028	6	..	+ 39 4 . . ..
294	Bootis, (4797)	P.	14 22 3.68 ..	2	P.	+ 36 52 13.85 ..
...	. . . .	T.	3.68 ± 0.012	6	..	. . . . ..
295	γ Bootis, ...	T.	14 26 2.07 ± 0.030	6	..	+ 38 58 . . ..
296	Bootis, (4816)	T.	14 27 12.42 ..	2	..	+ 37 37 . . ..
297	Bootis (4825)	T.	14 28 30.49 ± 0.020	6	..	+ 37 17 . . ..
298	ε Bootis	T.	14 38 26.12 ± 0.008	25	M.	+ 27 42 33.54 ..
...	. . . . .	C.	26.16 ± 0.032	12	C.	33.72 ± 0.39
...	. . . . .	P.	26.12 ..	1	P.	34.27 ..
299	Lalande, 26923	P.	14 38 56.99 ..	1	P.	+ 33 25 36.05 ..
300	Libræ, (4894)	..	. . . . ..	..	M.	— 15 22 11.20 ..
301	α^2 Libræ	T.	14 42 35.20 ± 0.012	15	M.	— 15 24 54.05 ..
...	. . . . .	C.	35.08 ..	2	C.	49.42 ..
302	Anonymous	..	14 45 ..	..	P.	+ 37 20 3.23 ..
303	β Ursæ Minoris	T.	14 51 11.84 ± 0.044	11	M.	+ 74 46 6.25 ..
...	. . . .	C.	11.78 ..	2	C.	5.74 ..
...	S. P. . . .	..	. . . . ..	..	M.	6.55 ..
304	δ Libræ	T.	14 52 57.66 ..	1	..	— 7 55 . . ..
305	Rumker, 4950	T.	15 0 42.45 ..	1	..	+ 37 2 . . ..
306	Bootis, (5026)	..	15 7 53 ..	..	P.	+ 38 49 45.40 ..
307	β^1 Libræ	T.	15 8 56.38 ± 0.012	18	M.	+ 8 49 32.40 ..
...	. . . . .	C.	56.41 ± 0.029	9	C.	32.89 ± 0.49
308	δ Bootis	P.	15 9 27.46 ..	1	P.	+ 33 52 40.70 ..
309	Rumker, 5048	T.	15 15 19.48 ..	1	..	+ 41 47 . . ..
310	Rumker, 5070	T.	15 18 41.43 ..	1	..	+ 38 41 . . ..
311	μ^1 Bootis	P.	15 18 49.58 ..	2	P.	+ 37 54 21.14 ..
312	μ^2 Bootis	P.	15 18 50.98 ..	2	P.	+ 37 52 33.92 ..
313	Rumker, 5110	T.	15 22 56.78 ..	1	..	+ 39 14 . . ..
314	Lalande, 28347	P.	15 25 40.10 ..	1	P.	+ 37 7 49.99 ..
315	α Coronæ Borealis	T.	15 28 20.20 ± 0.019	17	M.	+ 27 13 20.48 ..
...	. . . .	C.	20.40 ± 0.023	10	C.	20.19 ± 0.35
...	. . . .	P.	20.27 ..	3	P.	22.76 ..
316	Anonymous	..	15 32 35 ..	..	P.	+ 38 31 16.31 ..
317	ζ^1 Coronæ Borealis	P.	15 33 43.96 ..	2	P.	+ 37 7 32.74 ..

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318	ζ^2 Coronæ Borealis . . .	P.	15 33 43.51 ..	2	P.	+ 37 7 36.64 ..	2
319	Lalande, 28641	P.	15 34 53.66 ..	2	P.	+ 37 30 13.20 ..	2
320	α Serpentis	T.	15 36 52.92 ± 0.023	14	M.	+ 6 54 4.47 ..	1
...	. . . . .	C.	52.99 ± 0.032	9	C.	5.02 ± 0.45	9
321	β Serpentis	T.	15 39 15.81 ..	1	..	+ 15 54 ..	..
322	Lalande, 28799	..	15 40 47. ..	..	P.	+ 36 55 8.74 ..	1
323	Lalande, 28801	..	15 40 48. ..	..	P.	+ 36 54 44.27 ..	1
324	Weisse XV, 789 . . .	C.	15 41 11.77 ..	3	C.	— 14 4 34.67 ..	2
325	δ Coronæ Borealis . . .	T.	15 43 18.27 ..	1	..	+ 26 32 ..	..
326	ϑ Libræ	T.	15 45 17.38 ..	1	..	— 16 17 ..	..
327	κ Coronæ Borealis	P.	15 45 35.13 ..	1	P.	+ 36 7 34.13 ..	..
328	ζ Ursæ Minoris	T.	15 49 31.82 ± 0.124	12	M.	+ 78 15 11.01 ..	1
...	. . . .	C.	31.72 ± 0.173	4	..	. . . . ..	..
...	S. P. . . .	..	. . . ..	..	M.	10.87 ..	2
329	λ Coronæ Borealis	T.	15 50 20.23 ..	1	..	. . . . ..	..
...	. .	P.	20.11 ..	2	T.	+ 38 23 0 29 ..	2
330	δ Scorpii	T.	15 51 28.19 ..	1	..	— 22 11 ..	..
331	Coronæ Borealis, (5310) .	T.	15 53 25.37 ..	1	..	+ 37 4 ..	..
332	β^1 Scorpii	T.	15 56 43.27 ± 0.017	11	M.	— 19 23 25.00 ..	1
...	. . . . .	C.	43.19 ± 0.042	8	C.	24.68 ± 0.44	5
333	β^2 Scorpii	..	15 56 44 ..	..	M.	— 19 23 13.49 ..	1
334	Lalande, 29341	P.	15 58 32.21 ..	1	P.	+ 34 35 31.54 ..	1
335	Scorpii, (5351)	C.	15 59 16.68 ..	2	P.	— 12 20 13.56 ..	2
336	Serpentis, (5359) . . .	T.	16 0 27.93 ..	1	..	+ 10 18 ..	..
337	τ Coronæ Borealis	T.	16 3 29.24 ..	1	..	. . . . ..	..
...	. . . .	P.	29.12 ..	1	P.	+ 36 51 46.46 ..	1
338	Coronæ Borealis, (5411) .	P.	16 6 19.21 ..	1	P.	+ 36 48 55.89 ..	1
339	δ Ophiuchi	T.	16 6 29.36 ± 0.018	17	M.	— 3 18 14.67 ..	1
...	. . . . .	C.	29.34 ± 0.050	8	C.	14.07 ± 0.56	8
340	Weisse XVI, 173 . . .	C.	16 9 27.32 ..	3	C.	— 12 59 50.64 ..	3
341	Weisse XVI, 176 . . .	C.	16 9 36.66 ..	3	C.	— 13 4 11.67 ..	3
342	Herculis, (5460)	T.	16 14 46.99 ..	1	..	. . . . ..	..
343	α Scorpii	T.	16 20 13.02 ± 0.014	18	M.	— 26 5 37.86 ..	1
...	. . . . .	C.	12.78 ± 0.018	12	C.	38.93 ± 0.71	7
344	η Draconis	T.	16 21 58.22 ..	2	..	. . . . ..	..
...	. . . . .	C.	58.00 ..	1	C.	+ 61 51 17.84 ..	1
345	Herculis, (5546)	T.	16 28 27.36 ..	1	..	+ 38 24 ..	..
346	σ Herculis	T.	16 29 15.98 ..	1	..	+ 42 45 ..	..
347	Ophiuchi, (5567) . . .	T.	16 31 44.02 ..	1	..	— 20 7 ..	..
348	ζ Herculis	T.	16 35 37.76 ..	2	..	+ 31 53 ..	..
349	η Herculis	T.	16 37 45.39 ..	1	..	+ 39 13 ..	..
350	Ophiuchi (5627)	T.	16 39 36.11 ..	1	..	+ 2 20 ..	..
351	Weisse XVI, 780 . . .	T.	16 40 37.92 ..	1	..	+ 1 22 ..	..
352	Anonymous	T.	16 43 22.40 ..	1	..	— 5 51 ..	..
353	Herculis, (5652)	T.	16 43 25.21 ..	2	..	+ 30 13 ..	..
354	Herculis, (5666)	T.	16 44 47.60 ..	1	..	+ 30 4 ..	..
355	Ophiuchi, (5688)	T.	16 46 34.77 ..	1	..	— 5 54 ..	..
356	Herculis, (5693) . . .	T.	16 47 16.83 ..	1	..	+ 31 57 ..	..
357	Ophiuchi, (5700)	T.	16 48 15.39 ..	1	..	— 19 18 ..	..
358	κ Ophiuchi	T.	16 50 33.98 ..	2	..	+ 9 37 ..	..
359	Weisse XVI, 1033 . . .	C.	16 54 18.57 ..	1	C.	— 9 3 39.08 ..	1
360	Anonymous	T.	16 54 31.17 ..	1	..	— 9 4 ..	..
361	ε Herculis	T.	16 54 33.01 ..	2	..	+ 31 9 ..	..
362	Herculis, 5747	T.	16 56 3.95 ..	1	..	+ 33 47 ..	..
363	ε Ursæ Minoris	T.	17 1 31.01 ..	4	M.	+ 82 16 30.90 ..	1
...	. . . .	C.	31.64 ..	2	C.	29.56 ..	2

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			T.	17 1 46.67		..	3	..	− 15 32		..	..
			T.	17 2 43.11		..	1	..	+ 36 8		..	..
			T.	17 5 24.73		..	1	M.	− 9 6 2.29		..	1
			C.	24.63		..	1	C.	1.76		..	1
			T.	17 7 48.49	±	0.019	12	M.	+ 14 33 55.07		..	3
			C.	48.60	±	0.046	7	C.	55.74	±	0.53	4
			T.	17 11 47.32		..	1	..	+ 33 16		..	..
			T.	17 12 47.69		..	1	..	− 24 51		..	..
		(6863)	T.	17 15 2.93		..	1	..	+ 32 40		..	..
			T.	17 18 30.63		..	1	..	+ 37 17		..	..
			T.	17 24 40.82		..	1	..	+ 26 14		..	..
			..	. . . .		..	..	M.	+ 52 24 51.60		..	2
			C.	17 27 2.63	±	0.050	4	C.	49.43		..	2
	α	Ophiuchi	T.	17 27 58.30	±	0.023	14	M.	+ 12 40 24.44		..	3
			C.	58.34	±	0.019	9	C.	25.01	±	0.45	8
		Lalande, 32165	..	17 30 32		..	..	P.	+ 37 23 58.04		..	1
376	ο	Serpentis	T.	17 32 59.05		..	1	..	− 12 47		..	..
377	ι	Herculis	T.	17 35 13.93		..	1	..	+ 46 5		..	..
378	δ	Ophiuchi	T.	17 36 3.83		..	3	..	+ 4 38		..	..
379	γ	Ophiuchi	T.	17 40 22.22		..	4	..	+ 2 46		..	..
380	μ	Herculis	T.	17 40 35.14		..	1	..	+ 27 49		..	..
381		Herculis, (6068)	T.	17 48 25.04		..	2	..	+ 40 2		..	..
382	ν	Ophiuchi	T.	17 50 46.44		..	1	..	+ 30 12		..	..
383	θ	Herculis	P.	17 51 6.55		..	3	P.	+ 37 16 25.15		..	3
384	γ	Draconis	T.	17 53 7.49	±	0.072	8	M.	+ 51 30 29.99		..	3
			C.	7.55	±	0.038	9	C.	28.71	±	0.37	9
385	μ^1	Sagittarii	T.	18 4 47.53	±	0.014	10	M.	− 21 5 33.44		..	1
			C.	47.36	±	0.031	10	C.	34.91	±	0.46	9
386	η	Serpentis	T.	18 13 32.72		..	1	..	− 2 56		..	..
387	κ	Lyræ	T.	18 14 36.03		..	1	..	+ 34 0		..	..
388	δ	Ursæ Minoris	T.	18 20 43.39		..	7	M.	+ 86 35 48.55		..	9.4
			C.	43.55	±	0.099	9	C.	48.14	±	0.61	7
		S. P.	..	. . . .		..	..	M.	49.27	±	0.16	4.8
		S. P.	C.	18 20 40.29		..	1	..	. . . .		..	..
389		Lyræ, (6349)	C.	18 30 20.73		..	1	..	+ 38 47		..	..
390	α	Lyræ	T.	18 31 51.49	±	0.017	16	M.	+ 38 38 48.88	±	0.13	17
			C.	51.60	±	0.018	42	C.	49.11	±	0.20	31
			P.	51.36		..	3	P.	49.33			7
391		Lalande, 34868	P.	18 38 20.68		..	1	P.	+ 36 24 20.87		..	1
392	ζ^1	Lyræ	P.	18 39 36.33		..	1	P.	+ 37 27 5.61		..	1
393	β	Lyræ	T.	18 44 32.51	±	0.011	23	M.	+ 33 11 28.44		..	3
			C.	32.53	±	0.023	26	C.	29.18	±	0.22	22
			P.	32.43		..	2	P.	30.47		..	2
394		Lalande, 35137	..	18 44 34		..	..	M.	+ 33 10 47.71		..	1
395		Lalande, 35222	P.	18 47 1.99		..	1	P.	+ 36 21 44.40		..	1
396	ε	Aquilæ	T.	18 52 48.79		..	1	..	+ 14 52		..	..
397	ζ	Aquilæ	T.	18 58 30.91	±	0.010	25	M.	+ 13 38 39.31	±	0.12	8
			C.	30.86	±	0.019	20	C.	40.31	±	0.36	17
398	ι	Lyræ	P.	19 1 56.80		..	1	P.	+ 35 52 5.14		..	1
399		Lalande, 36125	P.	19 6 2.96		..	4	P.	+ 38 32 19.28		..	5
400	η	Lyræ	..	19 8 39		..	..	M.	+ 38 53 25.90	±	0.11	5
401		Lalande, 36324	P.	19 10 13.25		..	2	P.	+ 38 26 50.67		..	2
402	θ	Lyræ	P.	19 11 9.77		..	2	P.	+ 37 52 9.61		..	2
403		Lalande, 36478	P.	19 13 44.51		..	1	P.	+ 37 10 17.50		..	1
404		Anonymous	P.	19 15 4.49		..	1	P.	+ 36 28 8.65		..	1
405	δ	Aquilæ	T.	19 17 56.03	±	0.009	29	M.	+ 2 49 11.66	±	0.20	8
			C.	55.93	±	0.020	19	C.	10.58	±	0.38	16
406		Lalande, 36732	P.	19 19 11.15		..	1	P.	+ 36 53 46.27		..	1

NAME.	Inst.	RIGHT ASCENSION. 1850.0.	No. of Obs.	Inst.	DECLINATION. 1850.0.	No. of Obs.
		h. m. s. s.			° ′ ″	
Lalande, 36774	P.	19 10 58.88 ..	2	P.	+ 36 57 4.90 ..	2
Cygni, (6667)	P.	19 20 45.07 ..	3	P.	+ 36 1 11.02 ..	3
β Cygni	P.	19 24 40.43 ..	1	P.	+ 27 38 52.93 ..	1
μ Aquilæ	T.	19 26 45.60 ..	3	..	+ 7 4 ..	..
κ Aquilæ	T.	19 28 49.06 ..	1	..	— 7 21 ..	..
σ Aquilæ	T.	19 31 47.34 ..	3	..	+ 5 4 ..	..
Anonymous	P.	19 32 54.80 ..	1	P.	+ 38 32 7.51 ..	1
Anonymous	P.	19 34 11.04 ..	2	P.	+ 36 43 52.33 ..	2
χ Aquilæ,	T.	19 35 30.52 ..	1	..	+ 11 29 ..	..
Lalande, 37597	P.	19 38 28.20 ..	2	P.	+ 37 57 56.68 ..	2
Cygni, (6771)	P.	19 38 52.00 ..	2	P.	+ 36 59 41.04 ..	2
γ Aquilæ	T.	19 39 7.61 ± 0.009	35	M.	+ 10 15 5.14 ± 0.21	6
	C.	7.63 ± 0.016	27	C.	5.58 ± 0.28	17
Lalande, 37753	P.	19 42 8.51 ..	2	P.	+ 38 2 20.14 ..	2
α Aquilæ	T.	19 43 27.74 ± 0.013	33	M.	+ 8 28 33.95 ± 0.34	4
	C.	27.77 ± 0.024	24	C.	33.88 ± 0.27	17
Cygni, (6813)	T.	19 45 15.21 ..	..	..	+ 38 20 ..	..
Aquilæ, (6825)	C.	19 46 58.66 ..	1	C.	+ 8 4 36.48 ..	1
β Aquilæ	T.	19 47 56.64 ± 0.006	31	M.	+ 6 2 9.17 ± 0.24	6
	C.	56.61 ± 0.019	14	C.	9.18 ± 0.36	11
Anonymous	C.	19 49 3.44 ..	1	C.	— 14 25 20.82 ..	1
Lalande, 38037	P.	19 49 20.76 ..	1	P.	+ 34 30 26.55 ..	1
Weisse XIX, 1259	C.	. . . . ..	1	C.	— 14 24 31.92 ..	1
	T.	19 49 59.89 ..	1	..	. . . . ..	..
	..	. . . . ..	..	M.	33.91 ..	1
Cygni, (6849)	P.	19 50 29.99 ..	1	P.	+ 38 5 27.63 ..	1
	T.	30.16 ..	2	..	. . . . ..	..
η Cygni	T.	19 50 40.78 ..	1	..	+ 34 41 ..	..
Cygni, (6857)	T.	19 52 1.29 ..	1	..	+ 39 58 ..	..
Lalande, 38175	P.	19 52 27.35 ..	2	P.	+ 37 43 9.03 ..	2
Weisse XIX, 1319	C.	19 52 40.89 ..	2	C.	— 14 20 53.45 ..	1
	T.	41.40 ..	5	M.	53.31 ± 0.22	6
Lalande, 38202	P.	19 53 10.05 ..	1	P.	+ 37 42 4.60 ..	1
Anonymous	P.	19 54 11.43 ..	1	P.	+ 34 54 8.42 ..	1
Anonymous	P.	19 54 17.89 ..	1	P.	+ 34 53 17.66 ..	1
Cygni, (6875)	T.	19 54 25.05 ..	3	..	+ 36 38 ..	..
Lalande, 38283 a	P.	19 55 10.26 ..	2	P.	+ 36 9 38.23 ..	2
Lalande, 38283	P.	19 55 12.40 ..	3	P.	+ 36 10 42.84 ..	3
Anonymous	T.	19 55 53.69 ..	1	..	+ 36 39 ..	..
η Sagittæ	T.	19 58 30.34 ..	2	..	+ 19 34 ..	..
Anonymous	..	19 58 41 ..	..	M.	— 14 16 25.60 ..	1
Anonymous	P.	19 59 41.18 ..	1	P.	+ 38 2 54.50 ..	1
Anonymous	..	20 0 4 ..	..	M.	— 14 16 53.41 ..	1
Anonymous	P.	20 2 51.49 ..	1	P.	+ 37 41 44.96 ..	2
Anonymous	C.	20 2 53.13 ..	1	C.	— 14 14 16.70 ..	1
Anonymous	P.	20 2 54.30 ..	2	P.	+ 37 42 13.20 ..	2
Anonymous	..	20 2 59 ..	..	M.	— 14 17 47.02 ..	1
Anonymous	..	20 3 6 ..	..	M.	— 14 13 13.84 ..	2
ϑ Aquilæ,	T.	20 3 33.76 ..	1	..	— 1 16 ..	..
Anonymous	..	20 3 45 ..	..	M.	— 14 17 57.72 ..	1
Anonymous	..	20 4 13 ..	..	M.	— 14 7 8.52 ..	2
Weisse XX, 81	..	20 4 24 ..	..	M.	— 14 14 4.10 ..	1
Weisse XX, 101	..	20 4 56 ..	..	M.	— 14 7 33.15 ..	2
Anonymous	C.	20 5 45.84 ..	1	..	— 14 16 ..	..
Anonymous	..	20 6 26 ..	..	M.	— 14 6 28.00 ..	1
Weisse XX, 145	..	20 6 45 ..	..	M.	— 13 50 5.13 ..	1

No.	NAME.	Inst.	RIGHT ASCENSION. 1850.0.	No. of Obs.	Inst.	DECLINATION. 1850.0.	No. of Obs.
			h. m. s. s.			° ′ ″ ″	
547	Anonymous	P.	21 36 43.34 ..	2	P.	+ 37 13 14.08 ..	2
548	ε Pegasi	T.*	21 36 49.08 ± 0.013	23	M.	+ 9 11 22.71 ± 0.08	14
...		C.	49.12 ± 0.031	16	C.	22.74 ± 0.32	17
549	Anonymous	P.	21 37 4.06 ..	2	P.	+ 37 19 59.70 ..	2
550	Lalande, 42507	P.	21 40 30.74 ..	2	P	+ 36 58 0.04 ..	2
551	Lalande, 42546	P.	21 41 49.56 ..	1	P.	+ 35 53 11.85 ..	1
552	Lalande, 42563	P.	21 42 15.73 ..	2	P.	+ 37 57 12.02 ..	2
553	Anonymous	P.	21 43 9.59 ..	2	P.	+ 36 23 5.83 ..	2
554	μ Capricorni	T.	21 45 6.75 ..	2	..	— 14 15 ..	..
555	Anonymous	P.	21 45 42.40 ..	1	P.	+ 37 43 39.86 ..	1
556	Pegasi, (7623)	T.	21 45 58.23 ..	1	..	+ 28 6 ..	..
557	Lalande, 42765	P.	21 48 57.22 ..	1	P.	+ 35 26 18.27 ..	1
558	Pegasi, (7641)	T.	21 49 37.65 ..	1	..	+ 11 22 ..	..
559	Aquarii, (7670)	T.	21 55 22.99 ..	1	..	— 7 15 ..	..
560	Aquarii, (7685)	T.	21 57 4.32 ..	1	..	— 1 38 ..	..
561	α Aquarii	T.	21 58 4.55 ± 0.023	8	M.	— 1 2 47.25 ..	2
...		C.	4.66 ± 0.035	7	C.	46.71 ± 0.30	6
562	ι Aquarii	T.	21 58 19.75 ..	1	..	— 14 36 ..	..
563	α Gruis	T.	21 58 45.30 ..	1	..	. . . . ..	..
...		C.	45.06 ..	1	C.	— 47 41 3.81 ..	1
564	Weisse XXI, 1398	T.	22 0 32.28 ..	2	..	. . . . ..	..
...		C.	31.57 ..	2	C.	— 12 20 40.80 ..	1
565	Anonymous	T.	22 0 46.32 ..	1	..	— 13 45 ..	..
566	Weisse XXII, 28	T.	22 2 13.45 ..	1	..	— 13 19 ..	..
567	Aquarii, (7722)	T.	22 2 36.00 ± 0.023	22	M.	— 12 17 61.89 ± 0.24	6
...		C.	35.90 ± 0.037	9	C.	59.51 ± 0.53	6
568	Anonymous	P.	22 2 42.41 ..	1	P.	+ 36 40 45.09 ..	1
569	Weisse XXII, 59	..	22 3 35 ..	..	M.	— 11 45 44.14 ..	2
570	Anonymous	P.	22 3 55.70 ..	1	P.	+ 38 6 41.55 ..	1
571	Anonymous	T.	22 4 11.47 ..	1	M.	— 12 20 5.08 ..	1
572	Aquarii, (7740)	T.	22 4 16.87 ± 0.031	5	M.	— 11 48 12.10 ± 0.28	5
573	Lalande, 43319	P.	22 4 38.95 ..	2	P.	+ 35 35 31.34 ..	2
574	Lalande, 43320	P.	22 4 41.46 ..	1	P.	+ 36 33 22.91 ..	1
575	Aquarii, (7747)	T.	22 5 24.94 ..	2	..	— 12 40 ..	..
576	Weisse XXII, 105	T.	22 5 54.58 ..	2	M.	— 12 19 46.13 ..	2
577	Pegasi, (7753)	P.	22 6 9.90 ..	3	P.	+ 33 52 0.26 ..	3
578	Anonymous	T.	22 8 44.77 ..	1	..	— 12 5 ..	..
579	Weisse XXII, 175	C.	23 8 44.80 ..	1	C.	— 12 23 37.46 ..	1
580	ϑ Aquarii	T.	22 8 54.77 ..	2	..	— 8 32 ..	..
581	Anonymous	P.	22 9 25.04 ..	1	P.	+ 37 36 40.09 ..	1
582	Lacertæ, (7777)	P.	22 9 26.21 ..	2	P.	+ 37 0 12.89 ..	2
583	Pegasi, (7788)	T.	22 12 54.62 ..	1	..	+ 5 2 ..	..
584	Lalande, 43630	P.	22 13 52.26 ..	2	P.	+ 36 32 46.64 ..	2
585	Anonymous	P.	22 14 31.59 ..	1	P.	+ 36 31 32.56 ..	1
586	Lalande, 43751	P.	22 17 16.35 ..	1	P.	+ 37 48 39.54 ..	1
587	π Aquarii	T.	22 17 36.84 ..	4	..	+ 0 37 ..	..
588	ζ Aquarii	T.	22 21 6.44 ..	1	..	— 0 47 ..	..
589	Groombridge, 3820, S. P.	C.	22 24 29.99 ..	1	C.	+ 85 21 5.26 ..	1
590	Anonymous	P.	22 26 40.66 ..	1	P.	+ 37 21 23.35 ..	1
591	η Aquarii	T.	22 27 38.85 ..	1	..	— 0 53 ..	..
592	Lalande, 44195	P.	22 29 19.49 ..	1	P.	+ 34 47 15.10 ..	1
593	Lalande, 44319	P.	22 32 17.87 ..	1	P.	+ 36 35 47.26 ..	1
594	Lacertæ, (7901)	P.	22 32 32.30 ..	1	P.	+ 38 16 17.69 ..	1
595	Lalande, 44340	P.	22 32 44.72 ..	2	P.	+ 36 34 27.23 ..	2
596	Anonymous	P.	22 32 50.12 ..	1	P.	+ 36 37 3.28 ..	1

NAME.	Inst.	RIGHT ASCENSION. 1850.0.	No. of Obs.	Inst.	DECLINATION. 1850.0.	No. of Obs.
		h. m. s. s.			° ′ ″ ″	
ζ Pegasi	T.	22 33 58.89 ± 0.011	21	M.	+ 10 3 1.30 ..	1
	C.	58.86 ± 0.013	9	C.	0.58 ± 0.46	7
Anonymous	P.	22 36 3.09 ..	2	P.	+ 37 4 34.86 ..	2
Lalande, 44466	P.	22 36 7.00 ..	2	P.	+ 37 1 7.98 ..	2
Lalande, 44642	P.	22 41 19.30 ..	2	P.	+ 36 37 43.65 ..	2
λ Aquarii	T.	22 44 47.08 ..	3	..	. . . . ..	..
	C.	47.30 ..	1	C.	− 8 22 30.71 ..	1
Lalande, 44848	P.	22 47 43.63 ..	1	P.	+ 35 12 7.56 ..	1
Anonymous	P.	22 47 44.11 ..	1	P.	+ 35 11 8.85 ..	1
Lalande, 44854	P.	22 48 4.40 ..	2	P.	+ 36 16 42.50 ..	2
Lalande, 44862 (a)	P.	22 48 40.62 ..	1	P.	+ 35 32 51.52 ..	1
Lalande, 44862	P.	22 48 46.25 ..	2	P.	+ 35 33 6.80 ..	2
α Piscis Australis	T.	22 49 21.01 ..	7	M.	− 30 24 56.34 ± 0.31	7
	C.	20.89 ± 0.042	9	C.	57.54 ± 0.60	6
Lalande, 44922	P.	22 50 45.62 ..	1	P.	+ 38 30 26.84 ..	1
Lalande, 45078	P.	22 55 4.82 ..	1	P.	+ 36 40 21.08 ..	1
β Pegasi	P.	22 56 30.43 ..	1	P.	+ 27 16 15.62 ..	1
α Pegasi	T.	22 57 17.43 ± 0.015	14	M.	+ 14 23 57.95 ± 0.21	8
	C.	17.52 ± 0.025	11	C.	58.75 ± 0.46	10
Anonymous	P.	22 57 18.17 ..	1	P.	+ 38 6 12.67 ..	1
Lalande, 45323	P.	23 1 53.37 ..	2	P.	+ 38 6 13.74 ..	2
Anonymous	P.	23 4 12.59 ..	2	P.	+ 37 4 54.22 ..	2
ψ¹ Aquarii	T.	23 8 1.57 ..	1	..	− 9 54 ..	..
γ Piscium	T.	23 9 23.59 ..	1	..	+ 2 28 ..	..
Lalande, 45588	P.	23 9 46.53 ..	1	P.	+ 37 8 36.27 ..	1
Anonymous	P.	23 13 29.79 ..	1	P.	+ 36 41 59.55 ..	1
Andromedæ,(8136)	P.	23 13 39.60 ..	4	P.	+ 37 21 51.52 ..	4
Andromedæ, (8139)	P.	23 14 5.24 ..	1	P.	+ 37 45 41.66 ..	1
Anonymous	P.	23 16 27.60 ..	2	P.	+ 36 49 53.06 ..	2
υ Pegasi	T.	23 17 53.89 ..	1	..	+ 22 35	..
κ Piscium	T.	23 19 14.45 ..	1	..	+ 0 26	..
Andromedæ, (8195)	P.	23 23 55.39 ..	1	P.	+ 38 24 43.23 ..	1
Anonymous	P.	23 24 28.45 ..	1	P.	+ 37 47 47.32 ..	1
Lalande, 46097	P.	23 24 38.18 ..	2	P.	+ 37 28 48.30 ..	2
Anonymous	P.	23 25 2.11 ..	1	P.	+ 34 7 31.77 ..	1
Lalande, 46188	P.	23 27 18.38 ..	1	P.	+ 36 58 2.71 ..	1
Groombridge, 4101, S. P.	C.	23 27 49.99 ..	1	C.	+ 86 28 52.04 ..	1
ι Piscium	T.	23 32 14.17 ± 0.014	11	M.	+ 4 48 50.03 ..	3
	C.	14.15 ± 0.035	7	C.	49.68 ± 0.49	5
γ Cephei	T.	23 33 14.04 ..	2	M.	+ 76 47 43.73 ± 0.10	6
	C.	14.85 ..	1	..	37.18 ..	1
S. P.	..	. . . ..	..	M.	41.07 ..	1
λ Piscium	T.	23 34 23.69 ..	2	..	. . . . ..	..
	C.	23.92 ..	1	C.	+ 0 57 19.87 ..	1
Anonymous	P.	23 35 45.66 ..	2	P.	+ 36 6 19.31 ..	2
Anonymous	P.	23 45 10.67 ..	1	P.	+ 34 4 33.00 ..	1
Pisicium, (8303)	T.	23 45 23.69 ..	1	..	+ 1 16 ..	..
Lalande, 46811	P.	23 45 38.37 ..	1	P.	+ 34 13 11.48 ..	1
Bessel Z., 386	P.	23 47 13.12 ..	1	P.	+ 36 45 36.11 ..	1
Lalande, 46873	P.	23 47 28.94 ..	1	P.	+ 37 14 8.96 ..	1
ω Piscium	T.	23 51 36.66 ..	2	..	+ 6 2 ..	..
Lalande, 47049	P.	23 52 23.06 ..	2	..	+ 38 1 26.46 ..	2
Anonymous	P.	23 52 34.46 ..	4	..	+ 37 28 10.72 ..	4
Lalande, 47269	P.	23 59 5.82 ..	3	..	+ 37 47 26.13 ..	3

APPENDIX A.

OBSERVATIONS

ON

SOLAR SPOTS,

MADE

AT THE OBSERVATORY OF GEORGETOWN COLLEGE,

SEP. 20 TO NOV. 6, 1850.

BY

PROF. BENEDICT SESTINI, S.J.

NATIONAL OBSERVATORY.

APPENDIX.

SUN SPOTS.

Letter from Professor Sestini to Lieut. Maury, communicating observations on Solar Spots, made by him at the Georgetown College, Sept. 30, *to Nov.* 6, 1850.

GEORGETOWN COLLEGE OBSERVATORY, D. C.

November 18, 1850.

DEAR SIR:—Soon after Professor Curley received your kind letter, I endeavoured to fulfil your desire with regard to the series of changes of some most remarkable spots. With the present letter I undertake to satisfy the other request. And were you not acquainted with my native tongue, and did I not know your kindness, I should beg your indulgence for the imperfection of style, which you will find in this note. Therefore without going any farther, I will begin as well as I can the requisite account of the observations.

And first, you are already acquainted that the Director of this observatory, Professor Curley, suggested to me the idea of undertaking a series of observations on solar spots about two years ago; and that I made at that time some attempt to take drawings from the image of the Sun received on white paper. Which method, though perhaps in some respects preferable, yet in others is far inferior to that of drawings made by looking directly at the Sun. In the present series I adopted the last method before trying that of receiving the Sun's image on photographic paper, recommended to F. Curley by Professor Henry. Among the reasons that I did prefer a method more familiar to me, were the encouragement I received from you, and a sense of gratitude, urging me to finish as soon as possible that series of observations, for which you offered room in the next volume of your annual publications. And it is indeed to me a real satisfaction also to re-assume these little labors to which I feel inclined, and which I found proposed by Sir John Hershel, in his work on the observations made at the Cape of Good Hope, as a kind of research, worthy of being taken into consideration, although for a long time neglected. But my present collection, though the first part contains a succession of 29 days without interruption, does not furnish such numerous facts, from which could be derived satisfactory consequences. However, besides a little journal which I kept, and in which will be found some remarks respecting the observations of each day, I will not omit here to point out some facts, which may deserve peculiar attention. And first, that one which seems to oppose the opinion of the spots being produced by openings or whirls formed in the fluid matter, which covers the dark nucleus of the Sun. Among the arguments alleged by the patrons of this opinion, there is the form of the spots when at the edge of the solar disk, compared with that of the same spot near the centre. When, they say, any spot is about to disappear behind the Sun's western limb, the eastern portion of the umbra

first contracts in its breadth, and then vanishes; the nucleus also gradually contracts and vanishes, while the western portion of the umbra still remains visible. When a spot comes into view on the Sun's eastern limb, the eastern portion of the umbra first becomes visible, then the dark nucleus, and then the western part of the umbra makes its appearance. And I also saw the variations now described in some spots; in one of the small spots environed by vivid faculæ, which begins to appear on the 27th of September, and in another which came into view the 14th of October, and chiefly in one, which was visible for the first time on the 17th of October. It is still said that Dr. Wollaston and Lalande maintained the phenomenon not to be universal, and Lalande mentioned three observations of his own, and four observations by Cassini and De la Hive, in which the umbra did not vanish. And among my observations there are some similar cases, which before I speak of, I will remark that the want of the umbra in some parts about the dark nucleus is sometimes a real one. Observe the eastern spot of the 12th of October, and the same spot on the 1st of November; besides several other deficiencies which in many other cases may be easily observed. But there are spots, which at the edge of the disk, as well as at any other point of their visible track, are surrounded by uninterrupted umbra. Mark for example, that large spot which on the 19th of September was near the centre of the disk, and which, except the lateral contraction which depends on its oblique situation, continues to appear encircled by the umbra till its last appearence; see also that which enters the visible disk on the 20th of September, the very same one that is so variable during its course, especially in its extensive umbra unequal and frequently sparkling with brilliant points, and as difficult to be described as it was beautiful to behold. The nucleus moreover does not disappear before the last visible umbra, but in several cases continues to be seen to the very edge; and the spots which on the 28th, 29th and 30th of September, and those which on the 22d and 23d of October, are almost touching the western limb, and those also which came into view on the 2d, 3d and 11th of October, are as many confirmations of the fact. But the spot which more than any other appears to oppose the same opinion, is that visible for the first time on the 27th of September, the umbra of which instead of being visible towards the eastern side is visible on the opposite side alone, and the nucleus is perfectly visible. The succeeding days, the umbra is visible on both sides, although very changeable till the 6th of October; on the remaining days, 7th, 8th and 9th, it preserves a more invariable form, and constantly surrounds the nucleus visible to the edge. A diagram of the Sun, in which all the variations of this spot are seen at a glance, exhibits also to view its track on the solar disk. It should be called to mind also, that some authors use the very same umbra against the opinion of the spots being produced by depression; because, when for instance the spot is on the centre of the disk, the conical form of the holes necessarily contains a larger surface of the luminous fluid than that which is apparently visible between the nucleus and the margin of the umbra, and consequently they say, we would rather see a ring of light about the nucleus brighter than that of the Sun. This opposition does not evidently attack Sir William Herschel's view, who considers indeed the luminous strata of the atmosphere to be far above the level of the solid body, but sustained by a transparent elastic medium curving at some considerable lower level; a cloudy stratum which, being strongly illuminated from above, reflects a great portion of the light and forms the penumbra. Yet there remains still the objection of the nucleus visible at the edge, though at the

bottom of a profound hole, as also that of the luminous spots sometimes enclosed within the penumbra. But similar and perhaps stronger objections may be opposed against other opinions, and, as I have said already, the number of my own observations do not as yet afford that evidence which can plausibly induce to prefer one explanation to another. At any rate presenting to the public a copious series of observations, it might happen that others may discover that which I am unable to find myself. I shall not omit however to remark that, supposing the solar spots not to be depressed beneath the luminous surface of the Sun, since they appear so different from the remaining igneous and probably fluid matter, the first conclusion, which presents itself, is that they are masses of dark matter and like floating islands on a fiery ocean. Galileo, Kepler, Bulliand, Hevelius and Scheiner also, although formerly of a different opinion, had nearly the same idea. De la Hive may be reckoned in the same number, and it will not be here useless to quote a few words on this subject from De Lalande's astronomy. Galileo, he says, thought the solar spots to be nothing else but a kind of smoke or clouds of foam, which gathers on the tops of an ocean of fluid matter. Hevelius is of the same opinion. But De Lalande does not agree with such an explanation, and he opposes to it the regularity of motion of the spots over the solar disk, the reappearance of the spots on the same place and the effect of the centrifugal force arising from the rotation of the Sun about its axis. And on account of such reasons, perhaps he does not exactly agree either with De la Hive's, although he finds De la Hive's opinion much more probable; who thinks that the solar spots are eminences of solid masses floating on the fluid matter of the Sun's surface; yet he adds, that it may be that such opaque spots are the very same body of the Sun commonly covered with the fiery fluid, and which occasionally shows some of its eminences on account of the motion of the same fluid:— and in this manner he give his reasons of several phenomena, and especially of the umbra, which should be the same opaque body only covered by a thin luminous surface. But in this case it seems that the umbra would diminish by degrees, and insensibly disappear at the farthest distance from the nucleus, which frequently is not the case. Nay, on the contrary the umbra is commonly fainter near the nucleus than at the edge of the margin, where it appears like sea-weed cast on the shores of the ocean, and forming sometimes at that outer circumference a kind of bead-work, as may be seen on the larger eastern spot of the 30th of September and in some other instances. I should observe here also that the same outer circumference is neither always quite curvilinear, and as I have found asserted, without any angle or sharp projection, nor uniform in the depth of the color. Which things may be easily seen in the series added at the end of the daily drawings to show the changes of some most remarkable clusters. With regard to the centrifugal force, on account of which floating masses would be confined within certain limits about the equatorial regions, this effect would rather confirm than oppose the opinion. For it is a known fact, that the spots very seldom are seen beyond a zone bisected by the equator, and about 60° in breadth; an observation made since the discovery of the spots; because Scheiner, to whom several authors attribute the first discovery of them, and who certainly was the first to publish the discovery, and more than any other observed them from the year 1618, to the year 1627—says that the whole breadth of the zone on which the spots are visible, does not exceed 30° on both sides of the equator; although in very rare cases some small spots are seen a little beyond the limits of that zone.

the western limb, it appeared surrounded by brilliant faculæ, and on the 14th and 15th of October, when the same spots were visible again on the eastern side, though remarkably diminished, still they appeared encircled by faculæ. Other similar facts are marked on the drawings. With regard to the reappearance of the spots at the eastern limb on the place of that which disappeared between the 1st and 2d of October there were seen on the 15th and 16th some small points, but the others, which ought to have come into view from time to time, appeared to have vanished. But let us now come to the Journal :—

1850. JOURNAL.

September 19th. Some of the spots have faculæ.

20th. A new spot appears on the east side on account of the revolution of the Sun, and two new spots are formed—one disappears at the northwest quarter—the small cluster lying north of the round spot, diminishes both in number and size ;—the faculæ appear as on the preceding day.

21st. New spots continue to be formed, and clusters—faculæ appear as on the other days.

22d. The small northwestern spot has wholly disappeared, and faculæ only remain in its place—some changes in the other spots and clusters.

23d. The same changes continue, especially on the largest spot ;—three small spots south of the large western vanished ;—the spot on the southeast quarter, remarkably enlarged.

24th. Some spots are still getting larger, and the most westerly of the clusters has increased in size and number of individual nuclei ;—the number of all the nuclei is more than 60.

25th. The north-western spot disappears, and some faculæ are visible near its place ; some small spots begin to be visible towards the eastern limb ;—a bright spot is enclosed in the umbra of the southern cluster ;—the number of the nuclei surpasses 70.

26th. The small spot that lies south of the western clusters has vanished ;—two new spots on account of the revolution appear on the southeastern quarter, surrounded by faculæ ; the number of the nuclei is diminished.

27th. Two new spots appear, formed north of the western cluster;—another comes into view on the southeastern edge.

28th. A small cluster, that lies between two spots on the N. W. appears as one spot—faculæ as usual.

29th. Two N. W. spots have disappeared beyond the sun's edge.

30th. The small spots that were visible on the preceding day, near the middle of the Sun, have vanished.

October 1st. The western spot which began to diminish the preceding days, still diminishes.

2d. Two spots come into view on the eastern edge, and a small cluster which on the 30th had disappeared, appears again.

3d. New small spots brought to view by the rotation ;—the nucleus of the larger spot is divided into two.

tober 4th. Some small spots disappear by the Sun's rotation; some others diminish in size.

5th. Another small spot appears on the southeastern part.

6th. The same spot is no more visible.

7th. Some spots disappear by the rotation;—faculæ.

8th. Some new spots appear by the sun's revolution.

9th. New spots are formed on the southwestern quarter.

10th. The same spots increase, but one near them vanishes.

11th. The eastern small cluster has vanished;—a new spot comes into view.

12th. The western spots diminish; the eastern becomes a cluster.

13th. New small spots appear near the middle of the sun's disk;—another comes into view;—the cluster increases.

14th. The cluster still increases;—a new spot comes into view.

15th. The cluster increases still more, and contains more than 20 nuclei; new spots appear by the rotation in that place in which a larger spot appeared on the 20th of September.

16th. Nothing remarkable.

17th. Some new spots not seen at the commencement of the revolution come into view.

18th. The sun was not visible during this day.

19th. A new cluster comes into view;—the cluster of the preceding days shows some remarkable changes.

20th. The triple nucleus of the preceding day near the northwestern edge has the same parts separated farther apart from each other; some other nuclei of the same cluster seem to have united into one large spot.

21st. } No remarkable changes.
22d. }

23d. The nucleus of the large spot of the cluster, exactly on the northwestern limb, is perfectly visible.

24th. }
25th. }
26th. } Sun covered.
27th. }

28th. A beautiful cluster, containing at least 30 nuclei, on the southeastern quarter, where also a new spot appears.

29th. Some spots disappeared by the rotation;—the cluster presents several changes, increases in size, and there may be reckoned 46 different nuclei.

30th. The cluster still changes and increases; it contains about the same number of nuclei.

October 31st. New changes of the cluster;—it contains about 40 nuclei;—the next spot to the cluster appears environed by small nuclei, about 20 in number.

November 1st. The cluster, besides other changes, appears to divide itself into two parts; it is environed by a bright margin of faculæ.

2d. The division of the cluster increases; other changes.

3d. New changes on the large cluster;—the little nuclei about the next spot are getting larger, forming a new cluster.

4th. The larger cluster approaches the edge;—the following cluster diminishes again.

5th. The sun was visible for a short time and observed;—presented the larger cluster almost entirely passed beyond the visible disk;—the small one vanished.

6th. The solar disk appears for the first time during the present series of observations without spots.

And this is the whole which I intended to place before the drawings which I sent you. Please to accept it, if not as a labor deserving consideration, at least as a mark of my most sincere esteem.

Yours, respectfully,

BENEDICT SESTINI.

Lieut. M. F. MAURY,

National Observatory.

APPENDIX B.

OBSERVATIONS

ON

THE MISSISSIPPI RIVER,

AT MEMPHIS, TENN.,

BY

ROBERT A. MARR, U. S. N.

MARCH 1, 1850, TO MARCH 1, 1851.

NATIONAL OBSERVATORY.

OBSERVATIONS ON THE MISSISSIPPI RIVER.

Report and record of observations on the Mississippi River, &c., at Memphis, Tennessee, conducted from the 1st March, 1850, to the 1st March, 1851.

Rain.—The total quantity of rain which has fallen during the year, as measured by the rain gauge, is 49.47 inches.—See diagram[a] F.

Evaporation.—The amount of evaporation is 43.37 inches. This is the result found from evaporating water from a box, carefully prepared for the purpose, and indicates approximately the quantity evaporated from large bodies of water. The rate of evaporation from the surface of the earth, when wet and heated by the sun is much greater.

Temperature of the river water.—The mean temperature of the river is 60°.95; that of the atmosphere 60°.44. I expected to find the former the lower, as the river flows from more northern latitudes. Wolf river which runs along the same parallel of latitude, and enters the Mississippi at this place, has a greater temperature than the Mississippi. From this it seems that the mean temperature of each of these rivers is greater than that of the atmosphere about them. The gradual manner in which the temperature of the Mississippi river is affected by local changes in the temperature of the atmosphere, suggests the idea that it may be regarded as an index of the mean temperature of the climates through which the river flows. The difference between the temperature of the water at the surface and at the bottom of the river is usually so slight as not to be observable with the common thermometer. Occasionally I have found a difference of a small fraction of a degree.

Silt.—A quantity of water has been daily obtained from the middle of the surface of the river, and two quarts of it placed in a barrel to settle. In bulk the sediment thus obtained has been found to be in proportion to the water by which it was deposited as 1 to 2950. To investigate this subject more fully, I suspended buckets at various depths beneath the surface, and found the results interesting and important, as they indicate more sensibly the facility with which the Mississppi can effect immense deposits and removals of sand and earth.

When the river was near high water mark, I suspended a bucket 11 inches in diameter, 30 feet below the surface, for 5 minutes. At the same time a bucket full of water was taken from the surface. From the bucket below, I obtained 488 grains weight of sand, and from the surface water 60 grains of a mixture of sand and earth. Specimens of these deposites are in the papers marked D and E; and of those from a similar experiment when the river was low, in the papers F and G. A difference in the fineness of the sand is perceptible. Connected with the subject of the silt there appears to be a law, which, if established, may be of practical importance, by assisting those interested to judge more correctly of the probable local changes in the banks

[a] The diagrams referred to are on plate 45.

of the river. When the current strikes either bank rather obliquely, it cuts away and rapidly bears off the earth ;—the caving in and bearing off go on, and are greatest when a certain relation exists between the force, with which the current strikes the bank, and the velocity which it afterwards retains :—that is until the bank has a particular curvature. As the curvature increases, the current is checked to such a degree that a deposite commences, and the bank ceases to be affected. Hence it may be inferred, that owing to the great quantity of silt in this river, it cannot form bends of more than a certain degree of abruptness. Experiments in relation to silt would be rendered more interesting and important, if the sediment be collected during every rise of the river, and analyzed, and compared with the soil where the rise shall have originated.

Currents.—The surface currents have been measured almost entirely with the line and chip—deviating from the usual custom only in proportioning the time and line for the mile of 1760 yards, and in fitting the line with cork-floats to keep it on the surface of the water. Occasionally, when without an anchor, parallel lines across or from the river have been resorted to with advantage. There are sources of error peculiar to each mode, but the errors usually correct each other. On every occasion of measuring the current, angles were taken, and the position projected in a diagram, which as it became filled up, showed the velocities of the surface currents in the different sections at every stage of the river's rise and fall; and enabled me to determine the mean of the velocities, and also infer accurately the velocity in either side section, when circumstances prevented its actual measurement. The average velocity of the surface current in the middle of the river is 2.97 miles per hour ;—the mean deduced from the surface currents of the three sections is 2.41 miles.

There are so many obstacles (some of which have been before mentioned by myself and others) in the way of measuring the velocity of the current below the surface when the river is high and the current rapid, that it probably cannot be obtained at that time with much accuracy, even though miles should be passed over in conducting each observation. I have found it advisable to observe the currents below the surface only when the river was comparatively low—believing that from *their* velocities, those which obtain at high water may be inferred with a greater degree of accuracy than they can be observed. At high water I have frequently thrown over blocks near each other, and in five minutes have seen them separated 50 or 100 yards, which will illustrate the irregularity of the current.

For finding the velocities of the current below the surface, I have found the following method most accurate and expeditious. Having first ascertained the velocity of the surface current with the log line, I put overboard the loaded blocks, or vessels partially filled with water, with their floats attached by lines of the desired length; then put over a block loaded to sink just even with the surface of the water. This block is large, so that the action of the atmosphere upon it will be of no moment compared with its momentum. To this block I attach a fine line, wound on a small reel. The boat is kept near the float attached to the block below, and the surface block takes the line from the reel. After a certain time has elapsed, say five or ten minutes, the apparatus is hauled aboard, the boat anchored or made fast to the bank,—and the line, taken from the reel, measured, the length of which gives the difference between the currents.

In trying the rate of the current very near the bottom, the apparatus is so apt to be lost by becoming foul

objects on the bottom, and there is so much uncertainty as to whether the block does not touch occasionally, at, after a few trials, I found it expedient not to place the block lower than about 10 feet from the bottom.

The following table shows the means of many observations made under the most favorable circumstances. Except in the two cases indicated, the current below was the slowest.

Depth of river where experiments were made.	Time during which floats were drifting.	Distance drifted by float on surface.	Distance drifted by block below.	Depth below surface at which block was suspended.	Ratio of current above to that below.	REMARKS.
Feet.	m.	Feet.	Feet.			
50	11	2420	2320	10	1.043	Mean of 8 observations.
50	11.5	5060	4720	20	1.072	" " 4 "
50	8.5	3806	3434	30	1.108	" " 4 "
50	8.5	3740	3383	40	1.105	" " 4 "
50	10	2112	2122	10	0.995	Current below *fastest.*
50	10	1952	1980	20	0.986	Current below *fastest.*
21	6.5	800	728	10	1.099	Mean of 5 observations.
12	10	880	780	6	1.128	" " 4 "

From the above results chiefly, I determined to deduct one-tenth for retardation. The experiments, from ıich they were obtained, were made under exceedingly favorable circumstances—the air appeared perfectly lm—the surface of the water as smooth as a mirror, and no incident occurred to occasion interruption.

Of the many sources of error to be avoided in observing the currents below, I will mention one. It is, ıt the surface current is affected by steamboats for a very considerable time after they have passed.

It will be seen from the diagram E, that when the river is low, the velocities of the current on each side bear out the same proportion to that of the central section. This is not in accordance with what would be due the form of the bottom, at the line of observation. It arises from the fact that the course of the channel ove is such as to set the current against the western bank, thereby counterbalancing the greater retardation e on that side from the nearer proximity of the bottom.

In accordance with this hypothesis, it will be seen from the diagram, that as the river becomes higher, ɜ velocity of the current on the west side more nearly approximates to that of the centre, than does that on the st. Showing that as the river rises, the former is relieved from retardation by the bottom in a greater ratio ın the latter.

In a river where the depth is small compared to its width, and whose sides are rather a continuation of ɜ bottom than otherwise, the diminution of the velocity of the current on either side is due chiefly to the arer proximity of the bottom. From this, I suggest that an accurate and convenient mode of determining ɜ velocities at different depths, would be to select (when the river is low) a point for observing where the urse of the channel is straight, and the sides of equal and gentle declivity;—obtain the velocities from the ntre to the sides, and let the surface currents at certain distances from the centre, represent the currents below ɜ surface at the middle of the channel, and at proportionate distances from the surface. I think that in this

way, a general law for the average velocities of the current below may readily be deduced, of far more accuracy than could be derived from many hundred observations actually made upon the under currents themselves; so much do they vary, and so difficult is it to avoid sources of error.

Quantity of water passing.—Diagram D exhibits a vertical cross section of the river. During the year frequent changes of the bottom have been observed. The diagram is projected from soundings taken at the latest period of low water. There has been a great deposite on the eastern side; and on the west, the river has encroached about 12 yards. The deposite seems to have been owing to the general sluggishness of the stream on this side at this point during the summer months; and, also, perhaps to the accumulation of a bed of drift wood; since in sounding with a lead armed with a sharp iron, pieces of decayed wood were twice brought up. As the snag marked in the diagram D is in 50 feet water, it is probably held by other trees fast to the bottom. The area of the cross section of the river at high water is 174 099 square feet. In the diagram E the channel is divided into three sections. The amount of water passing daily has been estimated by multiplying the areas of the cross section into the mean velocities of their surface currents respectively—adding their products together—multiplying their sum by 24, and diminishing the result by a fraction over one-tenth for retardation from the bottom and sides of channel. During the year 13 709 006 232 791 cubic feet of water have passed this point.

It has been estimated that, of the rain water falling in the valley of the Mississippi only $\frac{1}{1000}$ part reaches the Gulf. What proportion is lost after once getting into the channel of the river is not known. On the borders of this river are immense tracts of overflowed land, and immense quantities of water may be taken up by evaporation, and wafted by the winds, to swell the currents of far distant rivers,—may disappear through fissures in the bed of the Mississippi itself, or be absorbed and filtered through the overflowed earth, to fill the capacious chambers of subterranean reservoirs.

Overflow.—It is impracticable for the officers of the yard to make any surveys of overflows in addition to their regular duties.

Very respectfully, your obedient servant,

ROBERT A. MARR,

Acting Master, Navy Yard, Memphis, Tenn.

Lieut. M. F. MAURY, U. S. N.

Superintendent, National Observatory, Washington, D. C.

Diagrams, plates 45.

Diagram A shows comparatively the quantity of water passing each month: together with the velocity of the stream.

B shows the total quantity during the year.

D is a vertical cross section of the river.

E shows the velocity of the surface current at different stages of the river—the dotted line with the names of the months, shows the height of the river during each month. High water mark is the best established point, and from it the rise and fall of the water were measured. It is marked on the diagram at 83 feet.

F shows in inches the quantity of rain, which fell in each month.

Day of month. 1850.	Height of river from bottom, in feet.	Average rate of surface currents per hour, in miles. A.	B.	C.	Areas of A.	Areas of B.	Areas of C.	Quantity of water passing each day, in cubic feet.	Temperature of the air.	Temperature of the river.	Evaporation in inches.	Rain water in inches.
March									°	°		
1	77.8	2.50	3.50	2.75	58321	62800	36624	52 936 476 120	67½	45		
2	77.4	2.50	3.60	3.00	57874	62600	36229	54 345 656 640	50½	46		
3	76.7	2.00	3.10	2.25	57097	61700	35535	46 138 127 330	54½	46		0.3
4	76.2	2.50	3.50	2.75	56545	61200	35040	51 087 242 200	41	46½		
5	76.2	2.50	3.50	2.75	56545	61200	35040	51 087 242 200	47½	47		
6	76.3	2.75	3.75	3.25	56655	61300	35139	56 744 000 560	61½	47		1.7
7	76.7	2.75	3.75	3.25	57097	61700	35535	57 200 514 360	48½	47		
8	77.1	3.00	4.00	3.50	57541	62100	35931	62 070 635 880	57	47		
9	77.9	3.00	4.10	3.50	58433	62900	36723	63 766 397 640	64½	47		
10	78.6	2.50	3.50	3.00	59218	63600	37417	52 668 353 920	48	47		
11	79.2	2.75	3.75	3.25	59896	64200	38017	60 154 265 260	51½	46½	1,40	
12	79.7	3.25	4.25	3·75	60463	64700	38517	69 919 068 120	55½	46½		0.3
13	80.4	3.00	4.00	3.50	61261	65400	39217	66 055 576 600	61½	46¾		0.4
14	80.8	3.00	4.00	3.50	61720	65800	39617	65 778 238 640	65	47		0.5
15	81.2	3.75	4.75	4.25	62180	66200	40017	81 472 991 820	68½	47½		
16	81.5	3.75	4.75	4.25	62525	66500	40317	81 926 362 320	70½	48		
17	81.8	3.50	4.50	4.00	62876	66800	40617	80 129 371 680	65	48		0.4
18	81.9	3.25	4.25	3.75	62993	66900	40717	72 850 438 320	49	48½		
19	82.0	3.25	4.25	3.75	63110	67000	40817	72 974 420 300	51¾	49½		
20	82.1	3.25	4.25	3.75	63227	67100	40917	73 098 402 280	50	49		0.6
21	82.4	3.50	4.50	4.00	63578	67400	41217	78 406 808 020	59½	49½	0.50	1.2
22	82.6	3.50	4.50	4.00	63812	67600	41417	78 684 599 200	51½	50		2.1
23	82.7	3.50	4.50	4.00	63930	67700	41517	78 828 974 960	40½	50½		
24	82.8	3.50	4.75	4.00	64047	67800	41617	80 902 717 400	46½	50		
25	82.9	4.00	5.00	4.50	64165	67900	41717	88 984 645 480	49½	49½		
26	82.8	3.00	4.25	3.75	64047	67800	41617	71 059 101 320	43½	48½		0.3
27	82.7	3.75	4.75	4.00	63930	67700	41517	80 650 909 360	35¼	48½		
28	82.7	3.50	4.50	4.00	63930	67700	41517	78 828 974 960	38½	48½		
29	82.8	4.00	5.00	4.50	64047	67800	41617	88 827 520 040	47¼	48½		
30	82.8	3.50	4.50	4.00	64047	67800	41617	78 979 553 400	49	48½		
31	82.9	3.25	4.25	3.75	64165	67900	41717	71 186 494 840	62½	48½	1.10	
		3.15	4.18	3.62				2 148 744 082 170	53.25	47.84	3.00	7.8
April												
1	82.7	3.25	4.25	3.75	63930	67700	41517	73 922 663 100	62½	49		
2	82.7	3.00	4.00	3.50	63930	67700	41517	71 099 927 240	59¼	49		
3	82.7	3.00	4.00	3.50	63930	67700	41517	71 099 927 240	62¾	49¼		
4	82.7	3.25	4.25	3.75	63930	67700	41517	73 922 663 100	60¼	49½		
5	82.6	3.00	4.00	3.50	63812	67600	41417	68 882 565 160	47¾	49½		
6	82.4	3.00	4.00	3.50	63578	67400	41217	68 633 354 120	53	50		
7	82.1	3.00	4.00	3.50	63227	67100	40917	68 258 597 560	52	50		
8	81.7	2.75	3.75	3.25	62759	66700	40517	62 934 636 600	58¾	50		
9	81.2	2.75	3.75	3.25	62180	66200	40017	62 356 564 380	51	50	0.75	0.3
10	80.3	2.75	3.75	3.00	61147	65300	39117	60 204 670 980	46¾	50		
11	78.8	2.50	3.50	2.75	59444	63800	37617	53 962 498 260	50¼	50½		1.3
12	77.1	2.25	3.25	2.50	57541	62100	35931	47 805 514 020	54½	51		
13	75.7	2.50	3.50	3.00	55995	60700	34545	51 773 350 200	52	51		
14	74.5	2.50	3.50	2.75	54685	59500	33357	49 358 531 260	57¼	51½		
15	73.5	2.50	3.50	2.75	53615	58500	32367	48 563 487 060	58¼	52	1.25	
16	73.1	2.50	3.50	2.75	52979	57900	31779	47 957 750 620	60¼	52		0.83

Day of month. 1850.	Height of river from bottom, in feet.	Average rate of surface currents per hour, in miles. A.	B.	C.	Areas of A.	Areas of B.	Areas of C.	Quantity of water passing each day, in cubic feet.	Temperature of the air.	Temperature of the river.	Evaporation in inches.	Rain water in inches.
April									°	°		
17	72.2	2.50	3.50	2.75	52240	57200	31083	47 255 906 940	58	52		
18	71.5	2.50	3.50	2.75	51505	56500	30397	46 555 034 460	60	51		0.22
19	71.1	3.00	4.00	3.25	51089	56100	30009	53 944 278 300	67¼	51½		0.23
20	71.5	3.00	4.00	3.25	51505	56500	30397	54 206 395 980	67½	51½		0.50
21	73.0	3.00	4.00	3.25	53085	58000	31877	56 175 967 980	72¾	52		
22	75.5	3.25	4.25	3.50	55775	60500	34347	63 434 708 540	69	52		2.02
23	78.4	3.25	4.25	3.75	58993	63400	37218	68 196 544 020	49	52		
24	79.9	3.50	4.50	4.00	60691	64900	38717	61 948 879 480	50	52		0.20
25	80.9	3.50	4.50	4.00	61835	65900	39717	78 452 212 580	58½	52		0.29
26	81.5	3.25	4.25	3.75	62525	66500	40317	72 314 410 400	66½	53		
27	81.9	3.00	4.00	3.50	62993	66900	40717	71 697 873 200	66½	54		0.25
28	82.1	3.00	4.00	3.50	63227	67100	40917	68 258 597 560	57¾	55		0.10
29	82.4	3.00	4.00	3.50	63578	67400	41217	68 633 354 120	57¾	56		
30	82.4	3.50	4.50	4.00	63578	67400	41217	78 409 392 320	62¾	56½	0.75	
		2.92	3.96	3.32				1 850 220 246 780	53.29	51.49	2.75	5.74
May												
1	82.4	3.50	4.60	4.00	63578	67400	41217	79 172 367 120	58	57		
2	82.5	3.50	4.60	4.00	63695	67500	41317	79 316 480 760	63½	58		0.38
3	82.6	3.50	4.60	4.00	63812	67600	41417	79 460 594 400	64¼	58		0.29
4	82.7	3.50	4.50	4.00	63930	67700	41517	78 836 574 960	57½	58		0.30
5	82.8	3.50	4.50	4.00	64047	67800	41617	78 979 053 400	53	58		0.16
6	82.9	3.50	4.50	4.00	64165	67900	41717	79 121 532 840	54¾	58		
7	82.9	3.50	4.50	4.00	64165	67900	41717	79 121 532 840	61½	58¼		0.70
8	82.9	3.50	4.50	4.00	64165	67900	41717	79 121 532 840	64¾	59		
9	82.9	3.50	4.50	4.00	64165	67900	41717	79 121 532 840	63½	59½		
10	82.9	3.50	4.50	4.00	64165	67900	41717	79 121 532 840	64½	59½		
11	82.9	3.50	4.50	4.00	64165	67900	41717	79 121 532 840	57¾	59¼		0.30
12	82.9	3.50	4.50	4.00	64165	67900	41717	79 121 532 840	62	59¼		
13	82.9	3.50	4.50	4.00	64165	67900	41717	79 121 532 840	58¼	59		
14	83.0	3.50	4.75	4.00	64282	68000	41817	81 195 747 600	59	59		0.75
15	83.0	3.50	4.50	4.00	64282	68000	41817	79 264 012 280	61¼	59½		0.60
16	83.0	3.00	4.25	3.50	64282	68000	41817	69 381 898 360	69½	59¾		
17	83.0	3.00	4.25	3.50	64282	68000	41817	71 313 888 360	73	59¾		
18	83.0	3.00	4.25	3.50	64282	68000	41817	71 313 888 360	68¼	60		
19	83.0	3.00	4.25	3.50	64282	68000	41817	69 381 898 360	67¼	60¾		
20	83.0	3.00	4.25	3.50	64282	68000	41817	71 313 888 360	74	61½	1.00	0.53
21	83.0	3.50	4.40	4.00	64282	68000	41817	78 491 821 600	69¾	62		
22	82.9	3.00	4.25	3.50	64165	67900	41717	71 186 494 840	74	62		
23	82.8	3.00	4.25	3.50	64047	67800	41617	71 059 101 320	76½	63		
24	82.7	3.00	4.00	3.50	63930	67700	41517	69 006 386 240	77¾	64		
25	82.4	3.00	4.00	3.50	63578	67400	41217	68 633 411 120	78	65		
26	82.1	3.00	4.20	3.50	63227	67100	40917	69 695 935 960	78½	65½		
27	81.6	3.50	4.50	4.00	62642	66600	40417	77 253 414 800	78¾	66	1.25	
28	80.9	3.25	4.25	3.50	61835	65900	39717	70 387 877 340	77½	67		
29	79.9	3.00	4.00	3.50	60691	64900	38717	65 521 327 400	68¾	68		
30	78.6	2.40	3.40	3.00	59218	63600	37417	51 059 553 984	66	69		0.50
31	77.2	2.00	3.10	2.50	57652	62200	36030	45 203 528 980	65	69	0.30	0.88
		3.25	4.30	3.66				2 279 401 308 624	66.62	65.63	3.85	5.31

Day of month. 1850.	Height of river from bottom, in feet.	Average rate of surface currents per hour, in miles. A.	B.	C.	Areas of A.	Areas of B.	Areas of C.	Quantity of water passing each day, in cubic feet.	Temperature of the air.	Temperature of the river.	Evaporation in inches.	Rain water in inches.
June									°	°		
1	75.5	3.00	4.00	3.50	55775	60500	34347	60 113 324 040	64½	69		
2	73.9	3.75	4.75	4.25	54043	58900	32763	70 573 000 080	64½	70		
3	72.4	2.00	3.00	2.25	52450	57400	31279	39 467 174 180	68½	71¾		
4	71.2	2.00	3.00	2.25	51193	56200	30106	39 316 413 520	71½	71¾		
5	70.0	1.75	2.75	1.75	49950	55000	28942	34 820 816 920	72¼	71½		
6	69.0	1.75	2.75	1.75	48935	54000	27972	31 929 313 970	75¼	72		
7	67.9	1.40	2.40	1.40	47847	52900	26905	26 275 442 056	73¼	72		
8	66.9	1.25	2.25	1.25	46879	51900	25935	24 745 254 700	75½	73		0.03
9	66.1	1.75	2.50	1.75	46119	51100	25163	28 511 955 820	76½	74	1.30	1.20
10	65.9	1.75	2.75	1.75	45931	50900	24971	29 687 914 020	69½	75		
11	65.7	1.75	2.75	1.75	45743	50700	24779	29 685 804 220	69	75½		
12	65.5	1.75	2.75	1.75	45555	50500	24587	29 683 694 420	70¾	76		
13	65.2	1.75	2.75	1.75	45279	50200	24299	29 680 529 720	72	76		0.48
14	64.9	1.75	2.50	1.75	45003	49900	24011	27 723 561 140	73¾	76		0.10
15	64.6	1.75	2.50	1.75	44725	49600	23723	27 530 739 500	73½	76¼		0.12
16	64.3	1.75	2.50	1.75	44455	49300	23437	27 337 917 860	72	76	0.75	2.58
17	64.1	1.75	2.50	1.75	44275	49100	23247	27 217 370 100	76½	76		
18	63.8	1.50	2.50	1.50	44005	48800	22962	25 250 430 740	78¾	76		
19	53.4	1.50	2.50	1.50	43648	48400	22572	25 011 841 600	78½	77		
20	63.2	1.50	2.50	1.50	43474	48200	22382	24 892 903 820	77¾	78		
21	63.1	1.50	2.50	1.50	43387	48100	22287	24 833 434 930	80	80		
22	62.9	1.50	2.50	1.50	43213	47900	22097	24 714 497 150	81¼	80		
23	62.5	1.50	2.50	1.50	42865	47500	21727	24 476 621 590	78	81	1.50	0.50
24	62.2	1.50	2.50	1.50	42607	47200	21442	24 298 214 920	80¾	81½		
25	62.0	1.50	2.50	1.50	42435	47000	21252	24 179 277 140	79½	81½		0.11
26	61.9	1.50	2.50	1.50	42349	46900	21157	24 119 808 250	80¾	82		0.82
27	61.8	1.25	2.25	1.25	42263	46800	21062	21 075 622 250	77¾	83		0.38
28	61.9	1.00	2.10	1.25	42349	46900	21157	19 035 709 130	78	83¼		0.03
29	62.1	1.50	2.50	1.50	42521	47100	21347	24 243 068 040	79½	83¼		
30	62.7	1.50	2.50	1.50	43039	47700	21917	24 597 967 680	80¾	83¼	0.50	0.25
		1.71	2.67	1.78				895 029 623 506	75.00	76.70	4.05	6.60
July												
1	63.0	2.00	3.00	2.00	43300	48000	22192	31 216 223 680	79½	83¼		0.45
2	63.2	1.75	2.75	1.75	43474	48200	22382	27 988 438 560	79¼	82¼		
3	63.2	1.75	2.75	1.75	43474	48200	22382	27 988 438 560	80	82		
4	63.2	1.75	2.75	1.75	43474	48200	22382	27 988 438 560	78	82½		0.60
5	63.0	1.75	2.75	1.75	43300	48000	22192	27 787 490 100	81¼	83	0.75	1.05
6	63.1	1.75	2.75	1.75	43387	48100	22287	27 921 455 740	88	83		0.10
7	63.5	1.75	2.75	1.75	43735	48500	22677	28 189 387 020	75¼	83½		0.04
8	64.0	1.75	2.75	1.75	44185	49000	23152	28 524 301 120	80½	84		0.67
9	64.4	2.00	3.00	2.20	44545	49400	23532	32 814 136 608	79	84¼		
10	64.5	2.00	3.00	2.20	44635	49500	23627	32 892 351 888	78¾	85		0.04
11	64.4	2.00	3.00	2.20	44545	49400	23532	32 814 136 608	81¾	86		
12	64.4	1.60	2.60	1.75	44544	49400	23532	27 295 579 560	81½	85		
13	64.3	1.75	2.75	2.00	44455	49300	23437	29 447 462 530	77¼	85		
14	64.3	1.75	2.75	2.00	44455	49300	23437	29 447 462 530	79¼	85½		
15	64.3	1.75	2.75	2.20	44455	49300	23437	29 447 462 530	80½	86		
16	64.1	2.00	3.00	2.20	44275	49100	23247	32 579 490 768	81	85½	1.30	
17	63.8	2.00	3.00	2.20	44005	48800	22962	32 344 844 928	80¾	84		0.05
18	63.5	2.00	3.00	2.20	43735	48500	22677	32 110 199 088	77	84½		

					Areas of A.	Areas of B.	Areas of C.	Quantity of water passing each day, in cubic feet.	Temperature of the air.	Temperature of the water.	Evaporation in inches.	Rain water in inches.
									°	°		
			2.20		43648	48400	22572	32 031 983 808	76	84		
			2.20		44365	49200	23342	32 657 706 048	74½	84		
			2.20		43213	47900	22097	31 651 182 688	79	84½		
			2.20		42865	47500	21727	31 334 857 488	80½	85		
			1.75		42607	47200	21442	27 321 164 990	79¼	84½	1.20	
			1.75		42521	47100	21347	27 254 378 680	76½	84¼		
			1.75		42521	47100	21347	27 254 378 680	78¼	84		
			2.00		42693	47300	21537	32 843 632 200	80	83		
			2.00		42693	47300	21537	32 843 632 200	78¾	83¼		
			1.50		42607	47200	21442	24 301 623 720	77½	83		0.16
			1.50		42349	46900	21157	22 793 999 680	83	82		
			1.50		42005	46500	20777	23 887 218 960	79½	82		
			1.50		41747	46200	20401	23 651 121 440	82	83	0.50	0.03
		1.81	2.80	1.91				897 623 280 970	79.00	83.88	3.75	3.19
		1.30	2.40	1.30	41489	45900	20213	21 478 438 123	82	82		
		1.50	2.50	1.50	41317	45700	20025	23 414 975 760	85	82½		
		1.25	2.25	1.25	41145	45500	19837	20 406 067 100	85¼	83		
		1.25	2.25	1.25	41145	45500	19837	20 406 067 100	86	83½		
		1.20	2.00	1.20	41575	46000	20307	18 873 653 525	85½	84	1.25	
		1.20	2.00	1.20	41489	45900	20213	18 839 329 248	82¼	85		
	61.3	1.20	2.20	1.20	41833	46300	20589	20 062 221 728	84	86		
	61.6	1.20	2.30	1.20	42091	46600	20872	20 741 993 162	84½	86		
	61.9	1.50	2.50	1.50	42349	46900	21157	24 039 021 680	86¼	86		
	62.3	1.75	2.75	1.50	42693	47300	21537	26 823 035 790	88¾	86½		
	63.0	1.50	2.50	1.30	43300	48000	22192	24 772 227 740	85½	85		
	63.2	2.20	3.20	2.20	43474	48200	22382	33 956 465 664	86¼	84	1.75	
	63.0	2.50	3.50	2.50	43300	48000	22192	37 657 989 600	87	84		
	62.7	2.50	3.50	2.50	43039	47700	21917	37 384 526 800	88¼	85		
	62.7	2.25	3.25	2.75	43039	47700	21917	34 313 900 412	82	86		
	62.9	2.25	3.25	2.30	43213	47900	22097	34 236 969 628	82½	86		
	62.9	2.00	3.00	2.20	43213	47900	22097	33 290 806 400	87½	86		
	62.9	1.50	2.50	2.50	43213	47900	22097	24 165 807 962	82¾	86		
	62.7	1.75	2.75	1.30	43039	47700	21917	27 655 489 560	82	86	1.50	
	62.5	1.75	2.75	1.75	42865	47500	21727	27 521 523 920	85¼	86		
	62.1	1.75	2.75	1.75	42521	47100	21347	26 985 661 360	84	86		0.02
	61.8	1.75	2.75	1.75	42263	46800	21062	26 583 764 440	79½	86		0.05
	61.5	1.50	2.50	1.75	42005	46500	20777	23 887 218 960	81½	85		
	61.3	1.50	2.50	1.50	41833	46300	20589	23 769 115 160	78	84		
	61.0	1.50	2.50	1.50	41575	46000	20309	23 414 803 760	75½	84		
	60.6	1.75	2.75	1.50	41231	45600	19931	26 254 352 620	66¼	84	0.75	
	60.2	1.50	2.50	1.75	40887	45200	19555	22 469 973 360	72½	83		0.35
	59.9	1.50	2.50	1.50	40629	44900	19273	22 115 661 960	74¼	83		0.05
	59.7	1.50	2.50	1.50	40457	44700	19085	21 879 454 360	75¾	82		0.05
	59.7	1.50	2.50	1.50	40457	44700	19085	21 879 454 360	76½	82		
	59.7	1.25	2.25	1.25	40457	44700	19085	21 879 454 360	52	80	0.25	0.95
		1.63	2.62	1.66				791 149 405 542	81.09	84.75	5.50	1.47

Day of month. 1850.	Height of river from bottom, in feet.	Average rate of surface currents per hour, in miles. A.	B.	C.	Areas of A.	Areas of B.	Areas of C.	Quantity of water passing each day, in cubic feet.	Temperature of the air.	Temperature of the water.	Evaporation in inches.	Rain water in inches.
September									°	°		
1	59.6	1.30	2.50	1.30	40371	44600	18991	21 290 258 212	65½	79		
2	59.7	1.30	2.50	1.30	40457	44700	19085	21 344 814 892	64	78		
3	59.9	1.30	2.50	1.30	40629	44900	19273	21 453 928 252	65½	77		
4	60.1	1.30	2.50	1.30	40801	45100	19461	21 563 041 612	71¼	76½	1.75	
5	60.4	1.30	2.50	1.30	41059	45400	19743	21 726 711 652	72¾	76½		
6	60.6	1.75	2.75	1.50	41231	45600	19931	25 731 562 490	72¾	75½		
7	60.8	1.75	2.75	1.50	41403	45800	20119	25 859 810 850	73¾	75½		
8	60.8	1.75	2.75	1.50	41403	45800	20119	25 859 810 850	72¾	75½		
9	60.8	2.00	2.75	1.50	41403	45800	20119	25 859 810 850	72	76		
10	60.8	1.25	2.25	1.25	41403	45800	20119	20 560 480 100	74	76		
11	60.7	1.25	2.25	1.25	41317	45700	20025	20 509 009 100	72¾	76		
12	60.5	1.25	2.25	1.25	41145	45500	19837	20 406 067 100	81	76		
13	60.2	1.50	2.50	1.30	40887	45200	19555	22 633 803 790	76¾	76		
14	59.9	1.50	2.50	1.30	40629	44900	19273	22 463 721 848	74	76		
15	59.6	1.50	2.50	1.30	40371	44600	18991	21 953 476 022	79¾	75½	1.70	
16	59.3	1.25	2.25	1.25	40113	44300	18711	19 788 703 200	70¼	75		
17	59.0	1.25	2.25	1.25	39855	44000	18432	19 634 722 350	70	74		
18	59.0	1.25	2.25	1.25	39855	44000	18432	19 634 722 350	75¾	73½		
19	59.0	1.00	2.50	1.25	39855	44000	18432	20 938 282 830	73½	73		0.03
20	59.2	1.25	2.25	1.20	40027	44200	18618	19 591 671 782	69¼	72½		
21	59.4	1.50	2.50	1.25	40199	44400	18804	22 154 521 920	70½	72¼		
22	59.5	1.50	2.50	1.25	40285	44500	18897	22 210 942 650	74½	72½		
23	59.4	1.20	2.40	1.25	40199	44400	18804	20 651 387 174	77½	72½	1.62	
24	59.3	1.25	2.20	1.20	40113	44300	18711	19 076 899 776	78	73		
25	58.9	1.50	2.25	1.20	39769	43900	18339	18 987 984 284	78¼	74		
26	58.4	1.50	2.50	1.25	39340	43400	17875	21 612 128 950	78¼	74½		
27	57.7	1.25	2.50	1.25	38745	42700	17231	21 197 884 150	80	75		
28	56.9	1.25	2.40	1.20	38065	41900	16495	19 145 804 330	71½	75½		
29	56.3	1.25	2.25	1.20	37557	41300	15945	18 131 023 330	67½	75½		
30	56.1	1.20	2.00	1.20	37389	41100	15763	16 701 137 048	73	74¾	.90	
		1.38	2.42	1.28				638 674 123 744	73.20	75.09	5.97	0.03
October												
1	55.9	1.25	2.00	1.25	37221	40900	15581	16 892 279 100	68	74½		
2	55.5	1.25	2.00	1.25	36885	40500	15217	16 696 113 100	68½	74¼	0.90	
3	56.1	1.20	1.75	1.20	37389	41100	15763	14 959 255 896	61½	73¼		
4	54.9	0.75	1.50	0.75	36381	39900	14677	11 356 250 120	65	73¼		
5	54.7	1.20	1.75	1.00	36213	39700	14497	14 380 226 152	61¼	72		
6	54.6	1.00	1.75	1.00	36129	39600	14407	13 521 740 125	51	70½	0.70	
7	55.4	1.00	1.75	1.00	35961	39400	14228	13 445 049 280	56¼	69¼		
8	54.3	1.00	1.75	1.00	35877	39300	14139	13 400 659 320	60	68		0.30
9	54.0	1.20	2.00	1.30	35625	39000	13872	15 724 889 472	69	68		
10	53.9	1.25	2.00	1.20	35541	38900	13783	15 460 993 548	70½	67½		0.30
11	43.9	1.25	2.00	1.20	35541	38900	13783	15 460 993 548	72½	67½	0.50	
12	53.8	1.20	1.80	1.00	35457	38800	13694	14 307 178 348	62¼	67¼		
13	54.1	1.20	1.80	1.00	35709	39100	13961	14 438 834 636	58	66		0.20
14	54.4	1.20	1.80	1.00	35961	39400	14228	14 564 852 224	58¼	65		
15	54.4	1.25	1.20	1.20	35961	39400	14228	16 063 753 122	65¾	65		
16	54.4	1.25	2.00	1.20	35961	39400	14228	16 063 753 122	74	66	0.90	
17	54.4	1.25	2.00	1.20	35961	39400	14228	16 063 753 122	68¼	66		0.54
18	54.4	1.25	2.00	1.20	35961	39400	14228	16 063 753 122	59¾	65		

Day of month. 1850.	Height of river from bottom, in feet.	Average rate of surface currents per hour, in miles. A.	B.	C.	Areas of A.	Areas of B.	Areas of C.	Quantity of water passing each day, in cubic feet.	Temperature of the air.	Temperature of the water.	Evaporation in inches.	Rain water in inches.
October									°	°		
19	54.3	1.25	2.00	1.25	35877	39300	14139	16 105 761 800	52	64		
20	54.3	1.25	2.00	1.25	35877	39300	14139	16 105 761 800	51¼	63		
21	54.2	1.00	1.75	1.00	35793	39200	14050	13 361 326 360	59½	62		
22	54.0	1.20	2.00	1.30	35625	39000	13872	15 724 889 472	62¼	62		
23	53.7	0.75	1.60	0.75	35373	38700	13605	11 199 145 320	63¼	61½		
24	53.5	0.75	1.60	0.75	35205	38500	13427	11 144 110 480	56	60½	1.70	
25	54.3	1.00	1.75	1.00	35877	39300	14139	13 400 659 320	47	60		
26	53.0	1.20	2.00	1.20	34790	38000	12987	14 232 894 048	43	58½		
27	52.7	1.25	2.00	1.25	34541	37700	12723	15 701 511 490	46¼	58		
28	52.5	1.20	1.80	1.00	34375	37500	12547	13 769 635 440	50¼	57½		
29	52.3	1.20	1.80	1.00	34209	37300	12373	13 736 402 576	54	57		
30	52.2	0.75	1.75	1.00	34126	37200	12286	11 476 644 680	57½	57		
31	52.2	0.75	1.60	0.75	34126	37200	12286	10 708 228 080	58	57		
		1.11	1.79	1.08				445 531 298 223	59.69	65.07	4.70	1.07
November												
1	52.1	1.25	1.75	1.25	34043	37100	12199	13 951 681 100	63¼	56¾		
2	52.0	0.75	1.50	1.00	33960	37000	12112	10 566 668 640	67½	57¼		
3	51.9	0.75	1.50	1.00	33877	36900	12025	10 532 697 780	64¼	57	1.30	
4	51.9	0.75	1.50	1.00	33877	36900	12025	10 532 697 780	63½	57½		
5	52.0	1.00	1.75	1.25	33960	37000	12112	12 870 742 800	70	58		
6	52.0	1.00	1.75	1.25	33960	37000	12112	12 870 742 800	51	57½		0.15
7	52.1	1.25	1.50	1.00	34043	37100	12199	12 606 112 630	46	56¼		
8	52.3	1.25	1.60	1.00	34209	37300	12375	13 107 263 110	46	56¾		
9	52.4	1.25	1.75	1.25	34292	37400	12460	14 062 599 600	51	56	0.60	0.08
10	52.6	1.00	1.50	1.00	34458	37600	12635	11 748 525 360	35¾	55¾		0.07
11	53.0	1.00	1.60	1.00	34790	38000	12987	12 325 711 040	46¾	55¼		
12	53.7	1.25	2.00	1.50	35373	38700	13605	16 198 588 000	50¼	54¼		
13	54.4	1.25	2.00	1.25	35961	39400	14228	16 175 101 450	45¼	54		
14	54.9	1.25	2.00	1.25	36381	39900	14677	16 370 800 900	47½	53¼		
15	55.1	1.25	2.00	1.25	36549	40100	14857	16 509 338 300	47¼	52¾		
16	55.1	1.25	2.00	1.25	36549	40100	14857	16 509 338 300	36½	51		
17	55.1	1.25	2.00	1.25	36549	40100	14857	16 509 338 300	36½	50		
18	54.9	1.25	2.00	1.25	36381	39900	14677	16 370 800 900	47¾	49	1.10	
19	54.8	1.25	2.00	1.30	36297	39800	14587	16 366 032 200	37	49		0.47
20	54.6	1.25	2.00	1.50	36129	39600	14407	16 290 318 832	32½	48½		
21	54.5	1.25	2.20	1.25	36045	39500	14317	17 495 069 010	56½	48		
22	55.4	1.20	2.00	1.25	36801	40400	15127	16 703 067 576	49	47¾		0.08
23	54.3	1.25	2.00	1.25	35877	39300	14139	16 105 761 800	44	46½		
24	54.2	1.30	2.00	1.25	35793	39200	14050	16 129 103 318	49½	46¾		
25	54.1	1.25	2.00	1.30	35709	39100	13961	16 032 227 500	60¼	47		0.30
26	54.0	1.20	2.00	1.50	35625	39000	13872	15 724 889 472	66¾	47		0.20
27	54.5	1.25	2.20	1.25	36045	39500	14317	17 495 069 010	68¼	47½	0.50	0.30
28	54.8	1.25	2.00	1.25	36297	39800	14587	16 366 032 200	44¼	47½		
29	55.1	1.25	2.00	1.25	36549	40100	14857	16 509 338 300	41½	48		
30	55.4	1.20	2.00	1.25	36801	40400	15127	16 703 067 576	49¼	47¾		
		1.16	1.87	1.22				447 738 725 584	50.52	51.40	3.50	1.65

Day of month. 1850.	Height of river from bottom, in feet.	Average rate of surface currents per hour, in miles. A.	B.	C.	Areas of A.	Areas of B.	Areas of C.	Quantity of water passing each day, in cubic feet.	Temperature of the air.	Temperature of the water.	Evaporation in inches.	Rain water in inches.
December									°	°		
1	55.6	1.25	2.00	1.50	36969	40600	15308	16 751 020 860	56½	48½		
2	56.0	1.30	2.30	1.60	37305	41000	15672	18 535 481 412	66	49		
3	56.4	1.25	2.00	1.50	37641	41400	16036	17 144 060 220	47¾	49		0.88
4	56.9	1.25	2.00	1.50	38065	41900	16495	17 390 937 900	36	48		1.05
5	57.5	1.25	2.00	1.50	38575	42500	17047	17 687 559 540	26¾	46		
6	57.9	1.25	2.00	1.50	38915	42900	17415	18 248 484 910	25¾	44		
7	58.1	1.25	2.00	1.50	39085	43100	17599	18 412 160 970	23¾	42		
8	58.2	1.30	2.25	1.50	39085	43100	17599	19 688 775 920	22¼	41	1.10	
9	58.2	1.50	2.55	1.75	39170	43200	17691	22 406 486 010	34½	40		
10	60.1	1.50	2.50	1.50	40801	45100	19461	23 041 442 910	35	39		
11	62.1	1.50	2.50	1.50	42521	47100	21347	24 240 273 040	46¾	38		
12	64.1	1.50	2.50	1.50	44275	49100	23249	25 432 566 720	51¾	38		
13	65.5	2.00	3.00	2.25	45555	50500	24587	33 821 098 740	39½	39		
14	67.0	2.50	3.50	2.50	46975	52000	26032	41 380 026 600	43½	40		
15	68.3	2.50	3.50	2.75	48239	53300	27293	43 603 712 940	51¼	40½		1.60
16	69.4	3.00	4.00	3.25	49335	54400	28360	51 321 618 000	53¼	41		
17	69.5	2.50	3.50	2.75	49435	54500	28457	44 567 277 260	40½	42		
18	69.7	2.50	3.50	2.75	49641	54700	28651	44 765 788 980	41¾	42		
19	69.7	2.25	3.25	2.50	49641	54700	28651	40 992 164 020	48¼	42	0.45	0.34
20	70.3	2.25	3.25	2.50	50259	55300	29233	41 535 861 180	42½	42		
21	68.9	2.25	3.25	2.50	48835	53900	27875	40 448 466 860	46½	42		
22	68.6	2.25	3.25	2.50	48535	53600	27584	40 176 618 280	42½	42		1.75
23	68.1	2.25	3.25	2.50	48043	53100	27099	39 723 537 213	39¾	42		
24	67.6	2.50	3.50	2.75	47553	52600	26614	39 270 456 146	37½	41½		
25	67.8	2.50	3.50	2.75	47749	52800	26808	39 089 223 960	41¼	41½		
26	68.3	2.50	3.50	2.75	48239	53300	27293	43 992 774 540	40	41½		
27	69.3	2.50	3.60	2.75	49235	54300	28263	44 986 925 940	40½	42		0.45
28	70.4	2.50	3.60	2.75	50362	55400	29330	46 080 492 480	41	42		
29	71.5	2.50	3.60	2.75	51505	56500	30397	47 191 704 520	35½	41½		
30	72.0	2.50	3.50	2.75	52030	57000	30887	47 055 657 660	35	41½	0.75	
31	72.4	2.50	3.50	2.75	52450	57400	31279	47 556 156 220	31¼	40½		
		2.01	3.00	2.23				1 056 538 811 951	42.11	42.22	2.30	6.07
1851 January												
1	72.5	2.75	3.75	3.00	52555	57500	37377	53 720 121 220	32½	39½		
2	72.3	2.75	3.75	3.00	52345	57300	31181	51 352 673 460	34¾	39		
3	71.8	3.00	4.00	3.25	51820	56800	30691	54 762 700 740	37¼	39		
4	71.3	3.00	4.00	3.25	51297	56300	30203	50 524 354 140	44	39		
5	70.8	2.75	3.75	3.00	50777	55800	29718	49 726 385 940	50¼	39		
6	69.3	2.75	3.75	3.00	49235	54300	28263	48 110 939 580	58¼	39½		
7	68.0	2.75	3.75	2.75	47945	53000	27002	45 953 054 460	50¼	39½		
8	66.5	2.75	3.75	2.75	46495	51500	25547	44 413 621 560	61¾	39		0.45
9	64.9	2.50	3.50	2.50	45003	49900	24011	38 700 361 200	49½	39	0.70	
10	63.4	2.25	3.25	2.25	43648	48400	22572	34 770 608 400	41¾	39½		
11	62.0	2.00	3.00	2.00	42435	47000	21252	30 465 816 480	44¼	39¾		
12	61.0	1.75	2.75	1.50	41575	46000	20307	27 692 987 710	46	39¾		
13	60.0	1.50	2.50	1.50	40629	44900	19273	22 942 732 560	44¼	39¾		
14	59.1	1.50	2.50	1.50	39941	44100	18525	22 471 170 480	56¼	40		
15	58.5	1.50	2.50	1.50	39425	43500	17967	21 601 537 440	57¾	40¼		
16	58.2	1.50	2.50	1.25	39170	43200	17691	21 432 161 520	55	40¾		

Day of month. 1851.	Height of river from bottom, in feet.	Average rate of surface currents per hour, in miles. A.	B.	C.	Areas of A.	Areas of B.	Areas of C.	Quantity of water passing each day, in cubic feet.	Temperature of the water.	Temperature of the air.	Evaporation in inches.	Rain water in inches.
January.									°	°		
17	57.9	1.25	2.00	1.75	38915	42900	17415	17 424 137 500	28¾	40¾	1.00	
18	57.6	1.75	2.75	1.50	38660	42600	17139	24 263 929 490	26¼	39¾		
19	37.3	1.50	2.50	1.50	38405	42300	16863	21 415 785 040	32¾	39¼		
20	57.1	1.50	2.50	1.50	38235	42100	16679	21 298 735 920	33½	39		
21	57.0	1.50	2.50	1.50	38150	42000	16587	20 746 257 840	47¼	39		
22	56.9	1.50	2.50	1.50	38065	41900	16495	20 689 099 200	53¼	38¾		0.70
23	56.8	1.50	2.50	1.50	37980	41800	16403	20 631 940 560	44	38¼		
24	56.5	1.50	2.40	1.50	37725	41500	16127	20 000 312 640	42½	38	0.60	
25	56.1	1.25	2.25	1.50	37389	41100	15763	17 753 299 872	47½	38		
26	56.0	1.30	2.40	1.50	37305	41000	15672	18 816 110 460	57¾	38½		
27	55.9	1.50	2.50	1.50	27221	40900	15581	20 119 508 640	58	39		
28	55.8	1.50	2.40	1.50	37137	40800	15490	19 609 914 240	58	40		0.24
29	55.7	1.50	2.40	1.50	37053	40700	15308	19 538 940 960	27	40		
30	55.5	1.30	2.25	1.30	36885	40510	15217	17 504 716 488	25¼	39		
31	55.6	1.30	2.25	1.30	36969	40600	15308	17 554 522 188	27¾	38¼		
		1.89	2.44	1.94				916 014 437 928	44.29	39.28	2.30	1.39
February												
1	55.8	1.25	2.20	1.30	37137	40800	15490	17 378 026 260	43	38¼		
2	56.0	1.25	2.20	1.30	37305	41000	15672	17 576 303 268	41	38½		0.59
3	56.3	1.30	2.40	1.40	37557	41300	15945	18 921 134 593	39½	38¼		
4	56.1	1.30	2.40	1.40	37389	41100	15763	21 331 618 382	39½	37	0.09	
5	55.8	1.25	2.25	1.40	37137	40800	15490	17 789 603 580	46	37		
6	55.0	1.20	2.00	1.20	36885	40500	15217	15 913 763 712	49½	37½		
7	55.1	1.30	2.40	1.40	36549	40100	14857	18 166 839 180	53¼	37¼		
8	54.8	1.25	2.25	1.30	36297	39800	14587	17 106 166 728	63	38½		
9	55.2	1.30	2.40	1.40	36633	40200	14947	18 221 452 956	57	39¾		2.30
10	55.8	1.30	2.40	1.40	37053	40700	15399	18 484 122 300	37	41		
11	57.0	1.40	2.50	1.50	38150	42000	16587	20 807 137 560	33¼	41		
12	58.6	1.50	2.60	1.50	39511	43600	18050	22 326 114 280	42	41		
13	61.5	2.00	3.00	2.00	42263	46800	21062	32 465 516 000	50	41¾		0.95
14	64.9	2.00	3.00	2.25	45003	49900	24011	33 324 314 740	60	42		1.60
15	68.0	3.00	3.90	3.25	47945	53000	27002	49 754 850 650	37½	43		
16	70.5	3.00	4.00	3.25	50465	55500	29427	52 169 167 780	29½	43		
17	72.7	3.25	4.25	3.50	52767	57700	31573	61 369 410 800	35¼	43		
18	74.0	3.00	4.00	3.50	54150	59000	32862	58 503 773 840	44	43		
19	75.0	3.25	4.50	4.00	55230	60000	33852	65 215 972 360	58	44	1.40	
20	76.5	3.50	4.50	4.00	56875	61500	35337	68 430 756 240	60½	45		1.74
21	77.5	4.00	5.00	4.25	57985	62500	36327	77 181 153 220	45¾	45		
22	78.4	4.25	5.25	5.00	58993	63400	37218	85 259 337 900	52¼	45½		0.50
23	79.3	4.30	5.50	5.25	60009	64300	38117	91 354 794 300	66	46		
24	80.7	4.50	5.50	5.50	60805	65000	38817	93 575 929 940	53	46¼		0.25
25	80.4	4.00	5.25	5.25	61261	65400	39217	87 122 047 160	54¾	46½		
26	80.9	4.00	5.00	5.00	61835	65900	39717	85 771 908 080	58¼	46¾		
27	81.2	4.00	5.00	5.00	62180	66200	40017	86 252 098 680	40	46¼		1.48
28	81.7	4.25	5.25	5.25	62759	66700	40517	91 856 886 360	33	45¾	1.30	
		2.57	3.60	2.95				1 342 330 188 769	54.36	41.98	2.70	8.77

These very interesting observations were made by order of the Hon. William A. Graham, Secretary of the avy, whose mind, imbued with enlarged and liberal views, was ever quick to comprehend, and ready to lvance the useful—and what can be more useful than a knowledge founded upon actual observation of the ibits of the most majestic of the rivers, the mighty Mississippi?

That river has commenced to break through its banks, and to threaten with destruction not only plantations ar it, but the village, the town and the city also. Terrible and destructive have been its crevasses latterly. ie attention of the people has been directed to them, and Government is about to undertake the task of epening the bars at its mouth.

These observations of Mr. Marr, which the Secretary was kind enough to have made at my request, have eady been found of great practical value. The engineers who have been engaged with plans for deepening ese bars, and of confining the river within its banks, have sought for and (I have no doubt) consulted them ith advantage.

I have before alluded to the fact here announced by this clever young officer, viz: that the mean temperare of the river water of the Mississippi at Memphis is above the mean temperature of the air at the same ace. The fact at first appeared startling; but the cause is obvious, and has been distinctly alluded to elsewhere.*

The mean temperature of the Amazon, according to the observations made by Lt. Herndon, during his scent of that river in 1852, is about two degrees and a half (2°.5 Fahr.) higher than that of the air. This er runs East; consequently, throughout its course, the climate is nearly the same.

The Mississippi comes from the North and goes to the South: that is, it runs from cold to warm climates. id we may conceive how, if the velocity of its current were not quite so great, the mean temperature of its ter at any place would express the mean temperature of that place itself. Thus we perceive that there is a ysical relation between the temperature of river water and the atmosphere; and that in the difference of an temperature between the water of rivers running North or South, and the air above it, the velocity of e stream may and probably does enter as a function.

The Nile and Gulf Stream are the reverse of the Mississippi; they run from warmer to cooler latitudes, d therefore it may be inferred that the greater difference between the mean temperature of a current and of e air above it, is to be found in the case of the Nile, the Gulf Stream, and their congeners.

The fact that the wind in the bends of the Amazon blows up-stream—never across—may probably find a lution in the circumstance of this difference of temperature. I am not aware as to the fact, but suppose that e general direction of the wind on the Nile is up-stream mostly.

I will merely mention here another fact, leaving it for a full discussion when I shall have procured more tistics and obtained the results of requisite observations—and that fact is, that the force of diurnal rotation the earth is sensibly expressed upon the Mississippi river, and that generally this force is manifested as well the rivers as by the trade winds.

* See Maury's Sailing Directions.

The planters along the west bank of the Mississippi are annoyed very much by the drift-wood lodging on their plantations. Immense quantities of it are brought down by the river at flood. The levees on the west bank are often damaged, and the planters greatly annoyed by having it lodged about their premises; whereas, they on the eastern bank are seldom or never incommoded by it.

Moreover, it is a well known fact that the raftsmen who float timber down the Mississippi in large masses, complain that their rafts *will* get over on the western bank. When the river is high, and its current rapid, it requires all their force to keep it from setting upon the west bank. They themselves say it is not the wind that blows them, only they do not know what it is, except that the raft will go over on that side.

But we have evidence stronger than this of the raftsmen. The great body of alluvial lands is west of the Mississippi; there are no bluffs on that side in the alluvial region; they are all on the eastern bank, showing the very curious fact that the channel of the river is traveling sidewise, as it were, or to the East. If the drift-wood and silt be by the force of diurnal rotation thrown on the western bank and cast up there, of course this accumulation of drift gradually obstructs the channel-way on that side, and makes it necessary for the river to cut away from the eastern side so as to obtain a channel of the requisite capacity for the discharge of its waters.

Thus we may deduce a law, as to the course of rivers which run though tertiary, or regions free of rocky formations, and it is this: that in all rivers so running, and particularly in those which in their course make more difference of latitude than departure, the drift-wood and marshes will be found generally on the western banks, the bluffs and signs of encroachment on the eastern: provided the river runs towards the Equator. But if it run from the Equator towards either pole, then will the diurnal rotation cause the drift-wood to be lodged on the eastern bank, and so force the river over upon the western, and in this case cause the bed of the river to travel westwardly.

This rule applies in the most striking manner to the Mississippi after it escapes from the rocky formations above the mouth of the Ohio river. And it is also strikingly the case upon the Madeira, one of the principal tributaries of the Amazon.

I said a few days ago to an American sailor, who had just descended the Madeira for 1200 miles in a canoe, "upon which side of the river did you observe the most drift-wood?" Without a moment's hesitation he said at once, "all upon the west bank."

According to this rule also, the course of rivers should be affected by these causes also; their channels should travel to the eastward in one case, to the westward in the other.

The specimens of the sediment of the Mississippi river, which Mr. Marr had obtained for me, having been forwarded to Professor Ehrenberg for examination, he has kindly given to them his valuable attention, and communicated the results of his investigation to the Berlin Academy, at its meeting on the 25th April, 1851, as follows:

"Finally, Mr. Ehrenberg spoke of the contents in solid parts and microscopic forms of life of the sediment of the Mississippi.

"The director of the Astronomical National Observatory of the United States of North America at Washington, Mr. Maury, (well known and honored by his great oceanic Wind and Current Charts,) has communicated to me on the 5th of April of this year, that very accurate observations are now being made at Memphis (Tennessee) on the Mississippi, respecting the quantity of water contained in the river at that place, and at the same time respecting the amount of solid matter carried in the water.

"A U. S. naval officer, Mr. Robert A. Marr, has undertaken these observations with great care; and Mr. Maury sends me four of the more important specimens of the sediment of the Mississippi, for microscopic examination, and in the same letter a brief extract from the account of Mr. Marr's results from each specimen.

"I have attempted the investigation of the microscopic forms of life in these specimens from the Mississippi sediment, and believe that this river, in the extent of its tributary regions second only to the Amazon, and whose delta is second only to the delta of the Ganges and Bramaputra, is well worth the attention of the Academy in these hitherto unknown relations of life. To the small number of materials no great objection can be made, since it is already far greater than I should have required. If such matter be only properly collected and preserved certainly pure, greater quantities would, it is true, give material additions to the results of the investigation, but in that which is important the relations and predominance of quantities, will make little change."

After reading from Mr. Marr's report the section relating to silt,[a] and referring to his statements respecting the relative temperatures of the air and river,[b] and the total quantity of water[c] which passed by Memphis during the year, Professor Ehrenberg continued:

"The four specimens sent to me have the following external characteristics:

1—D and E.

"The two specimens of deposit obtained at high water differ from the other two in having a fine substance and a yellowish-gray or bright brown color.

"D is the deposit of the surface water of the Mississippi from the middle of the river. It is a fine yellowish-gray sand, palpable between the fingers, with a yet finer mould, wherein only occasionally very small particles of mica can be perceived with a lens, and minute fibres of plants invisible to the naked eye. In heating, the mass becomes first black, then reddish, (feruginous.) Acids give no effervescence.

"E was obtained from the bucket which had remained 5 minutes at the depth of 30 feet in the middle of the river. The deposit is like the preceding in color, but coarser—that is, a sand too fine for writing sand, but whose particles are yet distinctly perceptible between the fingers. With the lens one sees distinct quartz particles, silvery mica scales and also plant fibres. Heat and acids gave the same result as with D.

2—F and G.

"Both the specimens obtained at low water are more sandy, less fine in grain, and in color more gray, less brown.

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a pages 13 and 14. *b* page 13. *c* page 16.

"F is the deposit of the water drawn from the surface at low water. It is a fine parti-colored gray, black, brown, and reddish, rough drifting sand, with black and silvery shining particles. The predominating substance is composed of colorless quartz particles mixed with a few white ones. The reddish particles may be feldspar, and the whole mixture seems to be a sand from granitic mountains. Amongst the sand is a small portion of combustible, formless and yet recognizable organic particles. Heat first blackens the sand, and then makes it bright brown. Acid produces no perceptible effervescence.

"G is the deposit from the depth of twenty feet. It is also a gray parti-colored writing-sand, entirely similar to the preceding, with perhaps a little coarser grain, though but slightly different, and of which the same things obtain throughout. Also in applying acids no distinct effervescence was perceptible, a proof that polythalamia are very rare.

"Microscopic investigation has resulted in the following summary of the invisibly small forms of life in the mud of the Mississippi:

Mud of the Mississippi river at Memphis, 1851.

	HIGH WATER.		LOW WATER.	
	Surface. D.	Depth 30 ft. E.	Surface. F.	Depth 20 ft. G.
POLYGASTRA, 44.				
Arcella, Globulus	-	-	-	+
Cocconëis, borealis?	+?			
lineata	-	+		
Placentula	-	+		
Cocconema, Lunula	+	+		
—?	-	+?		
Difflugia, lavis	-	+		
Oligoden	+			
Eunotia, amphioxys	+			
Dianæ?	-	+?		
gibba	-	-	-	+
granulata	-	+		
Sphærula	-	+		
Zebra	-	+		
—?	-	-	+?	+?
Fragilaria, Rhabdosoma	+	-	+	

Table—Continued.

	HIGH WATER.		LOW WATER.	
	Surface. D.	Depth 30 ft. E.	Surface. F.	Depth 20 ft. G.
Gallionella, distans	+?	-	+	+?
lævis	+	+	+	
Gloeonema, —?	+?	+?	+?	+?
Gomphonema, Augur	-	+		
clavatum	-	+		
gracile	+	-	-	+?
Himantidium, Arcus	-	-	+	+
Navicula, amphisphenia	-	+		
gracilis	+	+	-	+
Platalea	-	-	+	
Sigma	-	+	-	+
—?	+?	+?	+?	
Podosphenia, Pupula	-	+		
Pinnularia amphioxys	+	+		
borealis subacuta?	-	-	+?	
decurrens	+?	+	-	+?
gibba	-	-	-	+
Legumen	-	+		
Semen	-	-	+	
Silicula	-	-	-	+
viridis	-	+		
Surirella Cocconeïs	+			
Librile	-	+		
pygmæa	+			
—?	+?	+?		
Synedra, Ulna	+	+	+	+
Tabellaria, —?	+?			
Trachelomonas, lævis	-	-	-	+
	18	25	11	14
	34		20	
PHYTOLITHARIA, 37.				
Lithodontium, angulatum	-	-	+	+
biemarginatum	-	-	+	
Bursa	-	-	+	+
emarginatum	+	+	+	+
furcatum	+	+		
nasutum	+	+	+	+
Platyodon	+	+		
rostratum	-	-	+	+
Lithomesites, Pecten	-	+		
Lithosphæridium, irregulare	+	+	-	+
Lithostylidium, Amphiodon	-	+		
angulatum	+	+	+	+
biconcavum	-	+	-	+
bidens	-	-	-	+
clavatum	+	+	+	+
cornutum	-	+		

Table—Continued.

	HIGH WATER.		LOW WATER.	
	Surface. D.	Depth 30 ft. E.	Surface. F.	Depth 20 ft. G.
Lithostylidium, crenulatum -	-	-	+	
curvatum -	+	+	+	+
denticulatum -	-	+	+	+
irregulare -	-	-	+	+
lacerum - -	-	+	-	+
læve - -	+	+	-	+
obliquum - -	-	-	-	+
ovatum - -	-	+		
quadratum -	+	+	+	+
Rajula - -	-	-	-	+
rude - -	+	+	+	+
Serra - -	+	-	+	+
sinuosum -	-	-	-	+
spiriferum -	-	+		
Trabecula -	+	+	+	+
triquetrum -	-	+		
unidentatum	+			
Spongolithis, acicularis - -	+	-	+	+?
fistulosa - -	-	+?	+	
foraminosa - -	-	+	+	
mississippica -	+	+	+	+
	16	24	20	24
	27		28	
POLYTHALAMIA, 2.				
Rotaliarum, fragmenta - -	-	-	-	+?
Textilaria, globulosa - -	-	-	-	+
THREAD WORMS, 1.				
Anguillula - - - - -	+			
SOFT PLANT PARTICLES, 1.				
Plantary cellular structures -	+	+	+	+
Sum of organisms, 85 -	36	50	32	41
	2		3	
INORGANIC FORMS, 3.				
Crystal-prisms, green - -	-	+	+	+
yellowish green	-	-	+	
Mica - - - - -	+	+	+	+
Whole sum, 88 - - -	37	52	35	43
	65		54	

"The surface of high water, D, contains, in the given specimen of deposit, in 20 analyses, 37 microscopic forms, namely: 18 polygastra, 16 phytolitharia, 1 anguillula, plantary cellular structures, and mica scales, with quartz sand.

"In 30 feet depth at high water there were, also, according to 20 analyses, 52 forms; 25 polygastra, 24 phytolitharia, plant particles, and 2 crystalline forms in abundant quartz sand.

"In low water, 20 analyses of the surface mud gave 35 forms; 11 polygastra, 20 phytolitharia, plant particles, and 3 crystals with much quartz sand.

"At 20 feet depth, the mud contained, according also to 20 analyses, 43 forms; 14 polygastra, 24 phytolitharia, 2 polythalamia, plant particles, and 2 crystals with much quartz sand.

"In the high water sediment were 65 forms; in low water 54. The whole observed number of forms amounts to 88.

"All the forms, with the single exception of the polythalamia, are fresh water forms. The polythalamia give the impression of chalk forms, and are in part the predominating forms in writing chalk. Since moreover, they are the only sea forms, their introduction from chalk strata admits of no doubt.

"Among the 44 polygastra there is, besides the doubtful gloconema, no new kind showing itself. Among the 37 phytolitharia, only two appear with new names—*lithodontium biemarginatum*, corresponding to *L. emarginatum* with two depressions in the base, and *spongolithis mississipica*. The latter form is like the *spong. aspera*, very thick and short, sharp at both ends; and suggests a peculiar hitherto unknown fresh water fungus of the river, *spongilla*.*

"The great quantity of quartz-sand in the upper mud of the river is astonishing when we compare with small rivers; but it is much less so when we think of the whirling mass of water of so great a stream moving forward only in whirlpools and eddies. Since the explorations of the French expedition into Egypt, we have already known that the Nile carries on and deposits much sand in the middle of its stream; only at the sides in calmly flowing water is less sand thrown down, and further from the stream on the overflowed surface the mud consists of an excess of mould and organic matter without perceptible sand. Specimens of such material from the more quiet mud and more important deposite of the shores, which forms the peculiarly fruitful soil of the Delta, must yet be collected from the Mississippi, in order to obtain a correct view and to institute a comparison.

"From the material now at hand, not yet sufficient for farther conclusions, but yet very acceptable, we infer that also here some per cent. of the mud belongs to the invisible organic life which may be perhaps expressed as from $\frac{1}{50}$ to $\frac{1}{33}$ of the solid matter, or two to three per cent., which however can give no standard for the whole, since from the analogies of the Ganges, Nile, and other rivers, it is far too small.

"The Ganges at high water carries in one second 580,000 cubic feet of water, the Nile 176,148 cubic feet. According to the above data for the year, the Mississippi carries on the average 434,711 cubic feet: nearly exactly as much as the Ganges at high water and 2½ times as much as the Nile. In this water of the Mississippi the mud amounts to $\frac{1}{3333}$ consequently in every second to 147 cubic feet solid matter. In the Nile it amounts to $130\frac{2}{10}$, and in the Ganges to 557 cubic feet in a second. Hence the Mississippi in a mass of water equal to that of the Ganges carries only a mass of solid matter equal to that of the Nile.

"According to my direct investigations, the microscopic organic living part of the river mud, amounts to:

in the Ganges	($\frac{1}{8}$	—	$\frac{1}{4}$)	in each second 69 — 139	cubic feet.
Nile	($\frac{1}{20}$	—	$\frac{1}{10}$)	" " 6 — 13	" "
Mississippi	($\frac{1}{30}$	—	$\frac{1}{15}$)	" " 2 — 4	" "

The last is evidently too small, and will probably be modified by examination of the finer mud out of the current and near the shore.

"By analysis of the 21 quart-flasks of water from the Ganges and Bramaputra in every month, sent to me from Calcutta (see monthly reports 1846, p. 278.) I have made the most thorough investigations respecting the great proportion of microscopic life in the mud and delta formations of these rivers. According to these it is probable that the numbers for the two other rivers will increase yet more.

"The further extension of the details of these investigations is already printed in the second volume of the great work on Infusoria—the Micro-geological Investigations,—nearly ready for publication."

APPENDIX C.

TABLES

FOR FACILITATING THE REDUCTION

OF THE

APPARENT RIGHT ASCENSIONS AND DECLINATIONS

OF THE FIXED STARS

TO THEIR MEAN PLACES,

TOGETHER WITH

A GENERAL TABLE FOR ANNUAL PRECESSIONS.

NATIONAL OBSERVATORY.

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TABLES FOR THE REDUCTIONS OF THE PLACES OF THE FIXED STARS.

These tables have been prepared chiefly as they were required in the work of this Observatory. They are presented in the form in which they have been found most convenient in reducing the *observed* places of the stars to their *mean* places at a selected epoch.

The formulas from which they are derived are those of Bessel.* The coefficients are the same as have been adopted in the American Ephemeris and Nautical Almanac.† These include Struve's constant of aberration,‡

$$a = 20''.4451.$$

Struve's and Peters's constants for precession :§

(In time.) $$m = 3^s.0717{,}7 + 0^s.0000{,}19\ (y - 1850)$$

$$n = 20''.0564 - 0''.0000{,}86\ (y - 1850),$$

and Peters's coefficients for the terms of nutation, of which the principal is—

$$\mathcal{N} = 9''.2236 + 0''.0000{,}09\ (y - 1850).$$

Table VIII is from one prepared by Professor Keith. The series of Table I has been prepared by Professors Hubbard and Coffin, and the others by Professor Coffin, with the assistance of other officers of the Institution, among whom may be mentioned Lieutenants Wyman, Cooke, and G. W. Harrison, Passed Midshipmen Warley, Young, and Forrest, and Mr. Charles Ferguson.

TABLE I.

Co-efficients and auxiliaries for facilitating the reduction of the apparent places *of the fixed stars to their* mean places 1850.0,—*for the years* 1846 *to* 1854.

The instant of 1850.0 is assumed to be 1850, Jan. 1, 0*h*. 13*m*. mean time Washington, the sun's mean longitude at that time being 281°.

The quantities are given for each day at 6*h*. 52*m*., mean time Washington. The sidereal time of this epoch is also given for facilitating interpolation.

Formulas :

t = the interval before 1850.0 in tropical years and parts.

$\odot$ = true longitude of the sun.

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* Bessel's Tabulæ Regiomontanæ.

† American Ephemeris and Nautical Almanac, 1855, p. 227.

‡ Struve's Constant de l'Aberration, p. 47.

§ Peter's Numerus Constans Nutationis, p. 76. ¶ *Ibid*, pp. 46-48.

$\mathfrak{C}$ = mean longitude of the moon.

Ω = mean longitude of the moon's ascending node.

ω = the obliquity of the ecliptic.

Γ' = the mean longitude of the moon's perigee.

$i = \text{A} \tan \omega = 20''.4551 \cos \odot \sin \omega = 8''.1387 \cos \odot$

$h \sin \text{H} = \text{A} \quad = 20''.4451 \cos \odot \cos \omega = 18''.7554 \cos \odot$

$h \cos \text{H} = \text{B} \quad = 20''.4451 \sin \odot$

$g \cos \text{G} = n\text{C} = nt + 6''.8667 \sin \Omega - 0''.0822 \sin 2\Omega + 0''.5053 \sin 2\odot + 0''.0588 \sin (\odot + 262°.6)$

$g \sin \text{G} = \text{D} = + 9''.2236 \cos \Omega - 0''.0896 \cos 2\Omega + 0''.5507 \cos 2\odot + 0''.0093 \cos (\odot + 280°.3)$

(In time.) $f = m\text{C} = \frac{m}{n} g \cos \text{G}.$

" $\Delta_{\mathfrak{C}} f = 0^s.0125 \sin 2\mathfrak{C} - 0^s.0041 \sin (\mathfrak{C} - \Gamma')$ [Tables III.]

" $\Delta_{\mathfrak{C}} a = + 0^s.00542 \sin 2\mathfrak{C} \sin a + 0^s.00591 \cos 2\mathfrak{C} \cos a$
" $\Delta'_{\mathfrak{C}} a = - 0^s.0018 \sin (\mathfrak{C} - \Gamma') \sin a$ } [Tables IV.]

$\Delta_{\mathfrak{C}} \delta = + 0''.0813 \sin 2\mathfrak{C} \cos a - 0''.0886 \cos 2\mathfrak{C} \sin a$
$\Delta'_{\mathfrak{C}} \delta = - 0''.0270 \sin (\mathfrak{C} - \Gamma') \cos a$ } [Tables II.]

a_o = the star's mean right ascension
δ_o = the star's mean declination } 1850.0.

a = the star's mean right ascension,
δ = the star's mean declination, } at the date.

a' = the star's apparent right ascension,
δ' = the star's apparent declination, } at the date.

(In time.) μ = the star's proper motion in right ascension.
μ' = the star's proper motion in declination.

(In time.) Δa = the annual variation of the star's right ascension.
$\Delta \delta$ = the annual variation of the star's declination.

$k = \frac{1}{15} \cos a \tan \delta \, \Delta a + \frac{1}{225} \sin a \sec^2 \delta \, \Delta \delta, \qquad k' = -\sin a \, \Delta a.$

$\text{P} = .0007292 \, t^2.$

The reduction in right ascension is,

(In time.) $$a_o - a' = f + \Delta_{\mathfrak{C}} f + \tfrac{1}{15} g \sin (\text{G} + a) \tan \delta + \tfrac{1}{15} h \sin (\text{H} + a) \sec \delta + t\mu + pk + (\Delta_{\mathfrak{C}} a + \Delta'_{\mathfrak{C}} a) \tan \delta,$$

and in declination is,

$$\delta_o - \delta' = g \cos (\text{G} + a) + h \cos (\text{H} + a) \sin \delta + i \cos \delta + t\mu' + p k' + \Delta_{\mathfrak{C}} \delta + \Delta'_{\mathfrak{C}} \delta$$

the last two terms in each being supplied by Tables II to IV.

The terms omitted are, in $a_0 - a'$, those which result from using in the terms of the aberration a and δ stead of a' and $\delta' + \Delta_A\delta$*

and† $\quad -0^s.000010 \tan^2\delta \sin 2(\odot - a)$;

d in $\delta_0 - \delta'$, those which result from using in the terms of the aberration a and δ instead of $a' + \frac{1}{2}\Delta_A a$ and δ',*

and† $\quad +0''.000078 \tan\delta \cos 2(\odot - a)$

$\quad +0''.000023 \tan\delta \cos 2\odot$;

a and $\Delta_A\delta$ being the reductions for aberration in right ascension and declination respectively.

Table II*a* contains for each 5° of ☾ and 20*m*. of a ,

$$\Delta_{\mathfrak{C}}\delta = 0''.0813 \sin 2\mathfrak{C} \cos a - 0''.0886 \cos 2\mathfrak{C} \sin a$$

The signs of $\Delta_{\mathfrak{C}}\delta$ in this table must be changed when $a > 12h$.

Table II*b* contains for each 10° of $\mathfrak{C} - \Gamma$ and 1*h*. of a ,

$$\Delta'_{\mathfrak{C}}\delta = -0''.0270 \sin(\mathfrak{C} - \Gamma) \cos a$$

The signs must be changed for

a at the top with $\mathfrak{C} - \Gamma$ in the right hand column, and for

a at the bottom with $\mathfrak{C} - \Gamma$ in the left hand column.

Table III*a* contains for each 10° of ☾ ,

$$\Delta'_{\mathfrak{D}} f = 0^s.01248 \sin 2\mathfrak{C}.$$

Table III*b* contains for each 10° of $\mathfrak{C} - \Gamma$,

$$\Delta''_{\mathfrak{C}} f = -0^s.0041 \sin(\mathfrak{C} - \Gamma)$$

These two terms are included in $f + \Delta_{\mathfrak{C}} f$ in Table I.

Table IV*a* contains for each 5° of ☾ and 1*h*. of a ,

$$\Delta_{\mathfrak{C}} a = 0^s.00542 \sin 2\mathfrak{C} \sin a + 0^s.00591 \cos 2\mathfrak{C} \cos a$$

Table IV*b* contains for each 10° of $(\mathfrak{C} - \Gamma)$ and 1*h*. of a ,

$$\Delta'_{\mathfrak{C}} a = -0^s.0018 \sin a \sin(\mathfrak{C} - \Gamma)$$

The signs given to $\Delta_{\mathfrak{C}} a$ and $\Delta'_{\mathfrak{C}} a$ in tables IV*a* and IV*b* must be changed for

a at the top with ☾ or $\mathfrak{C} - \Gamma$ in the right hand column, and for

a at the bottom with ☾ or $\mathfrak{C} - \Gamma$ in the left hand column.

Table V contains for each 10 solar days,

$$\Delta_{\odot} f = 0^s.00905 \sin(\odot + 262°.6),$$

and for each 10 days and 1*h*. of a ,

$$\Delta_{\odot}\delta = 0''.0588 \sin(\odot + 262°.6) \cos a - 0''.0093 \cos(\odot + 280°.3) \sin a$$

The signs of $\Delta_{\odot}\delta$ in this table must be changed with a at the bottom.

* Ast. Nach., No. 486, p. 94.

† Peters's Numerus Constans Nutationis, pp. 73-74.

TABLE I. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1846.	Sid. time Wash.	G.		H		*log g.*		*log h.*		*log i.*		$f+\Delta f$		*t.*	*p.*	☾	☾—Γ
	h.	*h. m. s.*		*h. m. s.*										*years.*		°	°
Jan. 1	1.61	23 38 5.3	0.8	11 13 30	226	1.87824	39	1.30926	24	0.2022	371	+11.506	7	+3.9993	.0117	322.1	34.9
2	1.68	4.5	.7	14 44	26	785	39	902	27	.2393	340	.499	5	9966		345.3	47.9
3	1.74	3.8	.6	10 58	27	746	39	875	28	.2733	314	.494	5	9938		358.5	61.0
4	1.81	3.2	.5	7 11	27	707	38	847	31	.3047	291	.489	6	9911		11.7	74.0
5	1.85	2.7	.5	11 3 24	227	669	39	816	32	.3338	272	.483	7	9884		24.8	87.1
6	1.94	2.3	.4	10 59 37	27	630	38	784	31	.3610	254	.475	10	9856	.0116	38.0	100.2
7	2.01	2.0	.3	55 50	27	592	38	750	34	.3864	235	.465	12	9829		51.2	113.2
8	2.07	1.9	.1	52 2	28	554	38	713	37	.4103	227	.453	14	9802		64.4	126.3
9	2.14	1.8	.1	48 14	28	516	38	675	38	.4328	215	.439	14	9774		77.5	139.4
10	2.20	1.9	.1	44 26	28	478	37	635	40	.4541	201	.425	15	9747		90.7	152.4
11	2.27	2.1	.2	40 37	229	440	37	593	42	.4742	191	.410	13	9719	.0115	103.9	165.5
12	2.33	2.4	.3	36 48	29	403	37	549	44	.4933	182	.397	11	9692		117.1	178.6
13	2.40	2.8	.4	32 58	30	365	38	504	45	.5115	173	.386	9	9665		130.2	191.6
14	2.47	3.2	.4	29 8	30	328	37	457	47	.5288	165	.377	6	9637		143.4	204.7
15	2.53	3.6	.5	25 17	31	291	37	409	48	.5453	158	.371	4	9610		156.6	217.8
16	2.60	4.5	.7	21 26	231	255	36	359	50	.5611	151	.367	3	9583	.0114	169.8	230.8
17	2.66	5.3	.8	17 34	32	218	37	308	51	.5762	144	.364	4	9555		183.0	243.9
18	2.73	6.1	.8	13 42	32	182	36	255	53	.5906	139	.360	5	9528		196.1	257.0
19	2.79	7.0	.9	9 49	33	146	36	201	54	.6045	133	.355	7	9500		209.3	270.0
20	2.86	8.0	1.0	5 56	33	111	35	146	55	.6178	128	.348	11	9473		222.5	283.1
21	2.93	9.1	1.1	10 2 2	234	076	35	089	57	.6305	123	.337	13	9446	.0113	235.7	296.2
22	2.99	10.3	1.2	9 58 7	35	041	35	1.30031	58	.6428	118	.324	14	9418		248.8	309.2
23	3.06	11.5	1.2	54 12	35	1.87006	35	1.29972	59	.6546	113	.310	15	9391		262.0	322.3
24	3.12	12.8	1.3	50 16	36	1.86971	35	913	59	.6659	109	.295	15	9663		275.2	335.3
25	3.19	14.1	1.3	46 20	36	937	34	852	61	.6768	105	.280	15	9336		288.4	348.4
26	3.25	15.5	1.4	42 23	237	904	33	790	62	.6873	102	.267	13	9309	.0113	301.5	1.5
27	3.32	16.9	1.4	38 26	37	870	34	728	62	.6975	98	.256	11	9281		314.7	14.5
28	3.39	18.4	1.5	34 28	38	837	33	665	63	.7073	94	.248	8	9254		327.9	27.6
29	3.45	19.9	1.5	30 29	39	805	32	601	64	.7167	91	.242	6	9227		341.1	40.7
30	3.52	21.4	1.5	26 30	39	772	33	537	64	.7258	88	.238	4	9199		354.2	53.7
31	3.58	23.0	1.6	22 30	240	740	32	472	65	.7346	84	.235	3	9172	.0112	7.4	66.8
Feb. 1	3.65	24.6	1.6	18 29	40	708	32	407	65	.7430	82	.232	3	9144		20.6	79.9
2	3.71	26.2	1.6	14 28	41	677	31	341	66	.7512	78	.227	5	9117		33.8	92.9
3	3.78	27.9	1.7	10 26	42	646	31	275	66	.7590	76	.220	7	9090		46.9	106.0
4	3.85	29.6	1.7	6 23	43	615	31	209	66	.7666	73	.211	9	9062		60.1	119.1
5	3.91	31.3	1.7	9 2 20	243	585	30	143	66	.7739	71	.201	10	9035	.0111	73.3	132.1
6	3.98	33.0	1.7	8 58 16	44	555	30	077	67	.7810	68	.188	13	9008		86.5	145.2
7	4.04	34.7	1.7	54 12	44	526	29	1.29010	67	.7878	66	.176	12	8980		99.6	158.3
8	4.11	36.4	1.7	50 7	45	497	29	1.28944	66	.7944	66	.165	11	8953		112.8	171.3
9	4.17	38.0	1.6	46 1	46	468	29	878	66	.8007	63	.155	10	8925		126.0	184.4
10	4.24	39.7	1.7	41 55	246	439	29	813	65	.8068	61	.148	7	8898	.0110	139.2	197.5
11	4.31	41.3	1.6	37 48	47	411	28	748	65	.8127	59	.144	4	8871		152.4	210.5
12	4.37	42.9	1.6	33 40	48	384	27	683	65	.8183	56	.142	2	8843		165.5	223.0
13	4.44	44.5	1.6	29 32	48	356	28	619	64	.8238	55	.142	0	8816		178.7	236.7
14	4.50	46.1	1.6	25 23	49	329	27	556	63	.8290	52	.141	1	8789		191.9	249.7
15	4.57	47.6	1.5	21 13	250	302	27	493	63	.8341	51	.139	2	8761	.0110	205.1	262.8
16	4.63	49.1	1.5	17 3	50	276	26	431	62	.8390	49	.135	4	8734		218.2	275.8
17	4.70	50.6	1.5	12 52	51	250	26	370	61	.8437	47	.128	7	8706		231.4	288.9
18	4.77	52.0	1.4	8 40	52	225	25	310	60	.8482	45	.119	9	8679		244.6	302.0
19	4.83	53.4	1.4	4 28	52	199	26	251	59	.8524	42	.107	12	8652		257.8	315.0
20	4.90	54.7	1.3	8 0 16	252	174	25	193	58	.8566	40	.095	12	8624	.0109	270.9	328.1
21	4.96	55.9	1.2	7 56 3	53	150	24	136	57	.8606	38	.082	13	8597		284.1	341.2
22	5.03	57.1	1.2	51 49	54	125	25	081	55	.8644	36	.071	11	8570		297.3	354.2
23	5.09	58.2	1.1	47 34	55	101	24	1.28027	54	.8680	35	.062	9	8542		310.5	7.3
24	5.16	23 38 59.2	1.0	43 19	55	078	23	1.27975	52	.8715	33	.053	7	8515		323.7	20.4
25	5.23	23 39 0.2	1.0	39 4	255	054	24	924	51	.8748	31	.051	4	8487	.0108	336.8	33.4
26	5.29	1.1	0.9	34 48	56	031	23	875	49	.8779	31	.050	1	8460		350.0	46.5
27	5.36	1.8	.7	30 32	56	1.86008	23	827	48	.8809	30	.049	1	8433		3.2	59.6
28	5.42	23 39 2.5	.7	7 26 16	56	1.85986	22	1.27782	45	0.8837	28	−11.048	1	+3.8405		16.4	72.6
			0.0		257		23		41		27		2				

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO **1850.0**.

Epoch 6h 52m. mean time, Washington.

1846.	Sid time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_2 f$		*t.*		*p.*	ℭ	ℭ−Γ
	h.	*h m. s.*		*h. m. s.*								*s.*		*years.*			°	°
Mar. 1	5.49	23 39 3.1	0.5	7 21 59	257	1.85963	22	1.27738	42	0.8864	26	+11.046	3	+3.8378	.0107		29.5	85.7
2	5.55	3.6	.4	17 42	58	941	21	696	40	.8890	24	.043	6	350			42.7	98.8
3	5.62	4.0	.3	13 24	58	920	22	656	38	.8914	22	.037	9	323			55.9	111.9
4	5.69	4.3	.2	9 6	58	898	21	618	36	.8936	20	.028	9	296			69.1	124.9
5	5.75	4.5	.1	4 48	258	877	22	582	34	.8956	20	.019	11	268			82.2	138.0
6	5.82	4.6	.0	7 0 30	59	855	21	548	32	.8976	18	11.008	9	241	.0107		95.4	151.1
7	5.88	4.6	.1	6 56 11	59	834	20	516	30	.8994	16	10.999	8	214			108.6	164.1
8	5.95	4.5	.2	51 52	59	814	21	486	27	.9010	16	.991	6	186			121.8	177.2
9	6.01	4.3	.4	47 33	60	793	20	459	25	.9026	14	.985	3	159			134.9	190.3
10	6.08	3.9	.4	43 13	259	773	20	434	23	.9040	12	.982	1	132			148.1	203.3
11	6.15	3.5	.6	38 54	60	753	20	411	21	.9052	11	.981	1	104	.0106		161.3	216.4
12	6.21	2.9	.7	34 34	60	733	20	390	18	.9063	10	.982	1	077			174.5	229.4
13	6.28	2.2	.8	30 14	60	713	20	372	16	.9073	9	.983	0	049			187.7	242.5
14	6.34	1.4	1.0	25 54	59	693	20	356	13	.9082	7	.983	1	3.8022			200.8	255.5
15	6.41	23 39 0.4	1.0	21 35	259	673	20	343	11	.9089	6	.982	5	3.7995			214.0	268.6
16	6.48	23 38 59.4	1.2	17 15	60	653	19	332	9	.9095	4	.977	7	967	.0105		227.2	281.6
17	6.54	58.2	1.3	12 55	60	634	20	323	6	.9099	4	.970	9	940			240.4	294.7
18	6.61	56.9	1.4	8 35	59	614	19	317	4	.9103	2	.961	11	912			253.5	307.8
19	6.67	55.5	1.6	6 4 16	60	595	19	313	1	.9105	0	.950	12	885			266.7	320.8
20	6.74	53.9	1.6	5 59 56	260	575	20	312	1	.9105	0	.938	12	858			279.9	333.9
21	6.80	52.3	1.8	55 36	59	556	19	313	1	.9105	0	.928	10	830	.0104		293.1	347.0
22	6.87	50.5	1.9	51 17	59	537	19	317	4	.9103	2	.919	9	803			306.2	0.1
23	6.94	48.6	2.1	46 58	59	517	20	323	6	.9100	3	.913	6	775			319.4	13.1
24	7.00	46.5	2.2	42 39	59	498	19	332	9	.9096	4	.909	4	748			332.6	26.2
25	7.07	44.3	2.3	38 20	258	479	19	343	11	.9090	6	.908	1	721			345.8	39.2
26	7.13	42.0	2.4	34 2	58	459	20	356	13	.9083	7	.907	1	693	.0104		359.0	52.3
27	7.20	39.6	2.6	29 44	58	440	19	372	16	.9074	9	.907	0	666			12.1	65.4
28	7.26	37.0	2.6	25 26	57	421	19	390	18	.9064	10	.906	1	639			25.3	78.4
29	7.33	34.4	2.8	21 9	57	401	20	411	21	.9053	11	.904	2	611			38.5	91.5
30	7.40	31.6	2.9	16 52	257	382	19	433	22	.9041	12	.899	5	584			51.7	104.6
31	7.46	28.7	3.1	12 36	256	362	20	458	25	.9027	14	.891	8	556	.0103		64.8	117.6
Apr. 1	7.53	25.6	3.2	8 20	256	342	20	485	27	.9012	15	.882	9	529			78.0	130.7
2	7.59	22.4	3.3	5 4 4	55	322	20	514	29	.8995	17	.872	10	502			91.2	143.8
3	7.66	19.1	3.4	4 59 49	54	302	20	546	32	.8977	18	.862	10	474			104.3	156.8
4	7.72	15.7	3.5	55 35	251	282	20	579	33	.8958	19	.853	9	447			117.5	169.9
5	7.79	12.2	3.6	51 21	53	262	21	614	35	.8938	20	.847	6	419	.0102		130.7	183.0
6	7.86	8.6	3.7	47 8	52	241	20	652	38	.8916	22	.843	4	392			143.9	196.0
7	7.92	4.9	3.8	42 56	52	221	20	691	39	.8893	23	.841	2	364			157.0	209.1
8	7.99	23 38 1.1	4.0	38 44	252	200	21	732	41	.8868	25	.841	0	337			170.2	222.2
9	8.05	23 37 57.1	4.1	34 32	251	179	21	775	43	.8842	26	.842	1	310			183.4	235.2
10	8.12	53.0	4.2	30 21	50	158	21	820	45	.8815	27	.842	0	283	.0101		196.6	248.3
11	8.18	48.8	4.3	26 11	50	136	22	866	46	.8786	29	.841	1	255			209.8	261.4
12	8.25	44.5	4.3	22 1	50	115	21	914	48	.8756	30	.837	4	228			222.9	274.4
13	8.32	40.2	4.3	17 53	48	093	22	1 27.963	49	.8724	32	.830	7	201			236.1	287.5
14	8.38	35.8	4.4	13 45	48	071	22	1.28.014	51	.8691	33	.821	9	173			249.3	300.5
15	8.45	31.2	4.6	9 38	247	048	23	066	52	.8656	35	.809	12	146	.0101		262.5	313.6
16	8.51	26.6	4.6	5 31	47	026	22	119	53	.8619	37	.797	12	118			275.6	326.7
17	8.58	21.9	4.7	4 1 25	46	1.85003	23	173	54	.8581	38	.785	12	091			288.8	339.7
18	8.64	17.1	4.8	3 57 20	45	1.84980	23	228	55	.8542	39	.774	11	064			302.0	352.8
19	8.71	12.2	4.9	53 16	44	956	24	285	57	.8501	41	.766	8	036			315.2	5.9
20	8.78	7.3	4.9	49 12	244	933	23	342	57	.8458	43	.760	6	3.7009	.0100		328.3	18.9
21	8.84	23 37 2.3	5.0	45 9	43	909	24	400	58	.8414	44	.756	4	3.6982			341.5	32.0
22	8.91	23 36 57.2	5.1	41 7	42	885	24	459	59	.8368	46	.754	2	954			354.7	45.1
23	8.97	52.0	5.2	37 6	41	860	25	519	60	.8320	48	.753	1	927			7.9	58.1
24	9.04	46.8	5.3	33 5	241	835	25	579	60	.8270	50	.751	2	900	.0099		21.1	71.2
25	9.10	41.5	5.3	29 5	40	810	25	640	61	.8219	51	.747	4	872			34.2	84.3
26	9.17	36.2	5.3	25 6	39	784	26	702	62	.8166	53	.741	6	845			47.4	97.3
27	9.24	30.8	5.4	21 8	38	758	25	764	62	.8111	55	.733	8	817			60.6	110.4
28	9.30	25.4	5.4	17 11	237	732	25	827	63	.8054	57	.722	11	790	.0098		73.8	123.5
29	9.37	19.9	5.5	13 14	36	706	26	890	63	.7995	59	.711	11	762			86.9	136.5
30	9.43	23 36 14.4	5.5	3 9 19	35	1.84679	27	1.28954	64	0.7934	61	+10.699	12	+3.6735			100.1	149.6
			5.5		235		27		63		64		11					

[illegible] TION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

					H		log g.		log h.		$\frac{\log i.}{i.}$		$f + \Delta_2 f$		t.		p.	C	C − T
					h. m. s.								s.		years.			°	°
					3 5 24	234	1.84652	28	1.29017	63	0.7870	66	+10.688	10	+3.6709	.0098		113.3	162.7
					4 1 30	23	624	28	080	64	.7804	67	.678	6	681			126.5	175.7
					57 37	23	596	28	144	63	.7737	70	.672	5	653			139.6	188.8
					53 44	23	568	29	207	63	.7667	72	.667	2	625			152.8	201.8
					49 52	232	539	29	270	63	.7595	75	.665	1	598			166.0	214.9
					46 2	30	510	29	333	63	.7520	77	.664	2	571	.0098		179.1	228.0
					42 12	30	481	30	396	62	.7443	79	.662	3	543			192.3	241.0
					38 22	29	451	30	458	62	.7364	83	.659	5	516			205.5	254.1
					34 34	28	421	30	520	61	.7281	85	.654	8	488			218.7	267.2
					30 46	227	391	31	581	61	.7196	88	.646	11	461			231.9	280.2
					26 59	26	360	31	642	60	.7108	92	.635	13	434	.0097		245.1	293.3
					23 13	26	329	32	702	60	.7016	94	.622	14	406			258.2	306.4
					19 27	25	297	31	762	59	.6922	98	.608	15	379			271.4	319.4
					15 42	24	266	32	821	58	.6824	101	.593	13	352			284.5	332.5
					11 58	223	234	33	879	57	.6723	105	.580	12	324			297.8	345.6
					8 15	23	201	33	936	56	.6618	109	.568	9	297	.0096		310.9	358.6
					4 32	22	168	33	1.29992	55	.6509	113	.559	6	269			324.1	11.7
					0 50	22	135	34	1.30047	55	.6396	117	.553	5	242			337.3	24.8
					57 8	21	101	31	102	53	.6279	122	.548	3	215			350.5	37.8
					53 27	220	067	31	155	52	.6157	127	.545	4	187			3.7	50.9
					49 47	20	1.84033	35	207	51	.6030	132	.541	6	160	.0095		16.8	64.0
					46 7	19	1.83998	35	258	50	.5898	136	.535	7	133			30.0	77.0
					42 28	19	963	35	308	49	.5762	143	.528	10	105			43.2	90.1
		23	34	0.5	38 49	18	929	36	357	47	.5619	146	.518	12	078			56.3	103.1
		23	33	55.3	35 11	218	892	36	404	46	.5473	156	.506	14	050			69.5	116.2
					31 33	17	856	36	450	44	.5317	161	.492	11	3.6023	.0095		82.7	129.3
					27 56	16	820	37	494	43	.5156	169	.478	13	3.5996			95.9	142.3
					24 20	16	783	36	537	42	.4987	177	.465	12	968			109.0	155.4
					20 44	16	747	36	579	40	.4810	186	.453	12	941			122.2	168.5
					17 8	215	709	37	619	38	.4624	195	.443	10	914			135.4	181.5
					13 33	15	672	38	657	37	.4429	205	.436	7	886	.0094		148.6	194.6
					9 58	14	634	38	694	35	.4224	209	.431	5	859			161.8	207.7
					6 24	14	596	38	729	33	.4007	220	.427	4	831			174.9	220.7
					2 50	13	558	39	762	32	.3777	230	.424	3	804			188.1	233.8
					0 59 17	213	519	38	794	30	.3533	244	.420	4	777			201.3	246.9
		23	33	2.2	55 44	13	481	39	824	28	.3273	260	.413	7	749	.0093		214.5	259.9
		23	32	57.9	52 11	12	442	40	852	26	.2995	278	.405	8	722			227.6	273.0
				53.7	48 39	12	402	39	878	25	.2700	295	.393	12	694			240.8	286.1
				49.5	45 7	12	363	40	903	23	.2378	322	.379	14	667			254.0	299.1
				45.5	41 35	12	323	40	926	21	.2030	348	.363	16	640			267.2	312.2
				41.6	38 4	211	283	40	947	19	+1.463	371	.347	16	612	.0092		280.4	325.3
				37.8	34 32	12	243	40	966	18	.329	134	.332	15	585			293.5	338.3
				34.1	31 1	11	203	40	984	15	.195	134	.318	14	558			306.7	351.4
				30.5	27 30	11	163	41	1.30999	14	1.061	134	.306	12	530			319.9	4.4
				27.0	24 0	10	122	41	1.31013	14	0.926	135	.298	8	503			333.0	17.5
				23.6	20 29	211	081	41	025	12	.791	135	.291	7	475	.0091		346.2	30.6
				20.3	16 59	10	1.83040	41	035	10	.656	135	.286	5	448			359.4	43.6
				17.2	13 29	10	1.82999	41	044	9	.521	135	.281	5	421			12.8	56.7
				14.1	9 59	10	958	41	050	6	.386	135	.275	6	393			25.7	69.8
				11.2	6 28	11	917	41	055	5	.250	136	.267	8	366			38.9	82.8
				8.4	0 2 58	210	875	42	058	3	+0.115	135	.257	10	339	.0091		52.1	95.9
				5.7	23 59 28	10	834	41	059	1	−0.021	136	.245	12	311			65.3	109.0
				3.2	55 58	10	792	42	057	2	.156	135	.230	15	284			78.5	122.0
		23	32	0.7	52 28	10	751	41	054	3	.292	136	.215	15	256			91.6	135.1
		23	31	58.4	48 58	210	709	42	049	5	.427	135	.201	14	228	.0090		104.8	148.2
				56.2	45 28	10	667	42	042	7	.562	135	.188	13	202			118.0	161.2
				54.1	41 58	10	626	41	033	9	.697	135	.176	12	174			131.2	174.3
				52.2	38 27	11	584	42	022	11	.832	135	.168	8	147			144.3	187.4
				50.4	34 57	210	542	42	1.31009	13	0.967	135	.162	6	119	.0090		157.5	200.4
				48.7	31 26	11	500	42	1.30994	15	1.101	134	.157	5	092			170.7	213.5
		23	31	47.1	23 27 56	10	1.82458	42	1.30978	16	−1.235	134	+10.154	3	+3.6065			183.9	226.5
						211		41		18		134		4					

ABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1860.0.

Epoch 6h. 52m. mean time, Washington.

1846.	Sid. time Wash.	G.		H.		log g.		log h.		log i.		$f + \Delta_t f$		t.	p.	☾	☾ − ☿
	h.	h. m. s.		h. m. s.								s.		years.		°	°
July 1	13.51	23 31 45.6	1.3	23 24 25	211	1.82417	42	1.30960	20	n 0.1361	406	+10.150	6	+3.5037	.0090	197.0	259.6
2	13.57	44.3	1.2	20 54	11	375	42	940	22	.1767	368	.144	8	3.5010		210.2	257.7
3	13.64	43.1	1.1	17 23	11	333	41	918	23	.2135	337	.136	11	3.4983		223.4	265.7
4	13.70	42.0	1.0	13 52	12	292	42	895	25	.2472	313	.125	13	955		236.6	278.8
5	13.77	41.0	.9	10 20	212	250	42	870	27	.2785	290	.112	15	928		249.8	291.9
6	13.84	40.1	.7	6 48	12	208	41	843	28	.3075	271	.097	16	900	.0089	262.9	304.9
7	13.90	39.4	.7	23 3 16	12	167	41	815	30	.3346	254	.081	16	873		276.1	318.0
8	13.97	38.7	.5	22 59 44	13	126	41	785	32	.3600	240	.065	14	846		289.3	331.1
9	14.03	38.2	.4	56 11	13	085	41	753	34	.3840	225	.051	11	818		302.5	344.1
10	14.10	37.8	.3	52 38	213	044	41	719	35	.4065	213	.040	9	791		315.6	357.2
11	14.16	37.5	.2	49 5	14	1.82003	41	684	38	.4278	203	.031	7	764	.0088	328.8	10.3
12	14.23	37.3	.0	45 31	14	1.81962	40	646	38	.4481	192	.024	5	736		342.0	23.3
13	14.29	37.3	.0	41 57	15	922	41	608	40	.4673	183	.019	4	709		355.2	36.4
14	14.36	37.3	.1	38 22	15	881	40	568	42	.4856	174	.015	5	681		8.3	49.5
15	14.43	37.4	.2	34 47	215	841	40	526	43	.5030	165	.010	7	654		21.5	62.5
16	14.49	37.6	.3	31 12	16	801	40	483	45	.5195	159	10.003	8	627	.0087	34.7	75.6
17	14.56	37.9	.4	27 36	17	761	40	438	46	.5354	153	9.995	11	699		47.9	88.6
18	14.62	38.3	.5	23 59	17	721	39	392	47	.5507	145	.984	13	572		61.0	101.7
19	14.69	38.8	.6	20 22	17	682	39	345	48	.5652	141	.971	13	544		74.2	114.8
20	14.75	39.4	.7	16 45	218	643	39	297	50	.5793	134	.958	14	527		87.4	127.9
21	14.82	40.1	.7	13 7	19	604	39	247	51	.5927	130	.944	13	490	.0087	100.6	140.9
22	14.89	40.8	.9	9 28	19	565	39	196	52	.6057	124	.931	11	462		113.7	154.0
23	14.95	41.7	.9	5 49	20	527	38	144	53	.6181	120	.920	8	435		126.9	167.0
24	15.02	42.6	1.0	22 2 9	20	488	39	091	54	.6301	116	.912	5	407		140.1	180.1
25	15.08	43.6	1.1	21 58 29	221	451	37	1.30037	55	.6417	111	.907	3	380		153.3	193.2
26	15.15	44.7	1.1	54 48	22	413	38	1.29982	56	.6528	108	.904	3	353	.0086	166.4	206.2
27	15.21	45.8	1.2	51 6	22	376	37	926	57	.6636	103	.901	3	325		179.6	219.3
28	15.28	47.0	1.2	47 24	23	339	37	869	58	.6739	100	.899	2	298		192.8	232.4
29	15.35	48.2	1.3	43 41	23	302	37	811	59	.6839	97	.896	3	270		206.0	245.4
30	15.41	49.5	1.3	39 58	224	265	37	752	59	.6936	93	.891	5	243		219.2	258.5
31	15.48	50.8	1.4	36 14	25	229	36	693	60	.7029	90	.882	9	216	.0085	232.3	271.6
Aug. 1	15.54	52.2	1.5	32 29	25	194	35	633	61	.7119	87	.872	10	188		245.5	284.6
2	15.61	53.7	1.5	28 44	26	158	36	572	61	.7206	85	.859	13	161		258.7	297.7
3	15.67	55.2	1.5	24 58	27	123	35	511	61	.7291	82	.845	14	134		271.9	310.8
4	15.74	56.7	1.6	21 11	227	088	35	450	62	.7373	78	.831	13	106		285.0	323.8
5	15.81	58.3	1.5	17 24	28	054	34	388	62	.7451	77	.818	10	079	.0085	298.2	336.9
6	15.87	23 31 59.8	1.6	13 36	29	1.81019	35	326	62	.7528	74	.808	8	051		311.4	349.9
7	15.94	23 32 1.4	1.7	9 47	30	1 80986	33	264	62	.7602	71	.800	5	3.4024		324.6	3.0
8	16.00	3.1	1.6	5 57	30	952	34	202	63	.7673	69	.795	4	3.3997		337.7	16.1
9	16.07	4.7	1.7	21 2 7	231	919	33	139	63	.7742	67	.791	2	969		350.9	29.2
10	16.13	6.4	1.6	20 58 16	32	886	33	076	62	.7809	65	.789	2	342	.0084	4.1	42.2
11	16.20	8.0	1.7	54 24	33	854	32	1.29014	63	.7874	62	.787	4	915		17.3	55.3
12	16.27	9.7	1.6	50 31	33	822	32	1 28951	63	.7936	61	.783	6	887		30.5	68.3
13	16.33	11.3	1.7	46 38	35	790	31	888	62	.7997	58	.777	9	860		43.5	81.4
14	16.40	13.0	1.6	42 43	235	759	31	826	62	.8055	56	.768	9	832		56.8	94.5
15	16.46	14.6	1.7	38 48	36	728	31	764	62	.8111	55	.759	11	805	.0083	70.0	107.5
16	16.53	16.3	1.6	34 52	36	697	30	702	62	.8166	52	.748	12	778		83.2	120.6
17	16.59	17.9	1.5	30 56	37	667	30	640	60	.8218	52	.736	11	750		96.3	133.7
18	16.66	19.4	1.6	26 59	38	637	30	580	60	.8270	49	.725	9	723		109.5	146.7
19	16.73	21.0	1.5	23 1	239	607	29	520	59	.8319	47	.716	7	696		122.7	159.8
20	16.79	22.5	1.5	19 2	40	578	29	461	59	.8366	46	.709	4	668	.0083	135.9	172.9
21	16.86	24.0	1.4	15 2	40	549	28	402	58	.8412	43	.705	2	641		149.0	185.9
22	16.92	25.4	1.4	11 2	41	521	28	344	57	.8455	43	.703	0	613		162.2	199.0
23	16.99	26.8	1.4	7 1	242	493	28	287	56	.8498	41	.703	1	586		175.4	212.1
24	17.05	28.2	1.3	20 2 59	42	465	28	231	55	.8539	39	.704	1	559	.0082	188.6	225.1
25	17.12	29.5	1.2	19 58 57	43	437	28	176	54	.8578	38	.703	2	531		201.7	238.2
26	17.19	30.7	1.2	54 54	44	410	27	122	52	.8616	36	.701	5	504		214.9	251.2
27	17.25	31.9	1.1	50 50	245	383	27	070	52	.8652	34	.696	8	476		228.1	264.3
28	17.32	33.0	1.0	46 45	45	357	26	1.28018	50	.8686	34	.688	10	449	.0081	241.3	277.4
29	17.38	34.0	0.9	42 40	46	331	26	1 27968	49	.8720	34	.678	11	422		254.5	290.5
30	17.45	34.9	0.9	38 34	47	305	26	919	47	.8751	31	.667	12	394		267.6	303.5
31	17.51	23 32 35.8	0.8	19 34 27	247	1.80279	25	1.27872	45	n 0.8782	28	+ 9.655	11	+3.3367		280.8	316.6

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1846.	Sid. time Wash.	G.		H.		$\log g$.		$\log h$.		$\frac{\log i}{i}$.		$f+\Delta_2 f$		t.		p.		$\mathfrak{C}$	$\mathfrak{C}-\Gamma$
	h.	h m.	s.	h.	m. s.							s.		years.				°	°
May 1	9.50	23 36	8.9	3	5 24	1.84652	25	1.29017	63	0.7870	66	+10.688	10	+3.6708		.0098		113.3	162.7
2	9.56	23 36	3.3	3	1 30	624	28	080	61	.7804	67	.678	6	681				126.5	175.7
3	9.63	23 35	57.7	2	57 37	596	28	144	63	.7737	70	.672	5	653				139.6	188.8
4	9.70		52.1		53 44	568	29	207	63	.7667	72	.667	2	625				152.8	201.8
5	9.76		46.4		49 52	539	29	270	63	.7595	75	.665	1	598				166.0	214.9
6	9.83		40.7		46 2	510	29	333	63	.7520	77	.664	2	571		.0098		179.1	228.0
7	9.89		35.0		42 12	481	30	396	62	.7443	79	.662	3	543				192.3	241.0
8	9.96		29.3		38 22	451	30	458	62	.7364	82	.659	5	516				205.5	254.1
9	10.02		23.7		34 34	421	30	520	61	.7281	85	.654	8	488				218.7	267.2
10	10.09		18.0		30 46	391	31	581	61	.7196	87	.646	11	461				231.9	280.2
11	10.15		12.3		26 59	360	31	642	60	.7108	92	.635	13	434		.0097		245.1	293.3
12	10.22		6.6		23 13	329	32	702	60	.7016	94	.622	14	406				258.2	306.4
13	10.29	23 35	1.0		19 27	297	31	762	59	.6922	98	.608	15	379				271.4	319.4
14	10.35	23 34	55.3		15 42	266	32	821	58	.6824	101	.593	13	352				284.5	332.5
15	10.42		49.7		11 58	234	33	879	57	.6723	105	.580	12	324				297.8	345.6
16	10.48		44.1		8 15	201	33	936	56	.6618	109	.568	9	297		.0096		310.9	358.6
17	10.55		38.5		4 32	168	33	1.29992	55	.6509	113	.550	6	269				324.1	11.7
18	10.61		32.9	2	0 50	135	34	1.30047	55	.6396	117	.553	5	242				337.3	24.8
19	10.68		27.4	1	57 8	101	34	102	55	.6279	122	.548	3	215				350.5	37.8
20	10.75		21.9		53 27	067	34	155	53	.6157	127	.545	4	187				3.7	50.9
21	10.81		16.5		49 47	1.84033	35	207	52	.6030	132	.541	6	160		.0095		16.8	64.0
22	10.88		11.1		46 7	1.83998	35	258	51	.5898	136	.535	7	133				30.0	77.0
23	10.94		5.8		42 28	963	35	308	50	.5762	140	.528	10	105				43.2	90.1
24	11.01	23 34	0.5		38 49	928	35	357	49	.5619	143	.518	12	078				56.3	103.1
25	11.07	23 33	55.3		35 11	892	36	404	47	.5473	146	.506	14	050				69.5	116.2
26	11.14		50.1		31 33	856	36	450	46	.5317	156	.492	14	3.6023		.0095		82.7	129.3
27	11.21		45.0		27 56	820	36	494	44	.5156	161	.478	14	3.5996				95.9	142.3
28	11.27		39.9		24 20	783	37	537	43	.4987	169	.465	13	968				109.0	155.4
29	11.34		34.9		20 44	747	36	579	42	.4810	177	.453	12	941				122.2	168.5
30	11.40		30.0		17 8	709	38	619	40	.4624	186	.443	10	914				135.4	181.5
31	11.47		25.2		13 33	672	37	657	38	.4429	195	.436	7	886		.0094		148.6	194.6
June 1	11.54		20.4		9 58	634	38	694	37	.4224	205	.431	5	859				161.8	207.7
2	11.60		15.7		6 24	596	38	729	35	.4007	299	.427	4	831				174.9	220.7
3	11.66		11.1		2 50	558	38	762	33	.3777	230	.424	3	804				188.1	233.8
4	11.72		6.6	1	0 59 17	519	39	794	32	.3533	244	.420	4	777				201.3	246.9
5	11.79	23 33	2.2		55 44	481	38	824	30	.3273	260	.413	7	749		.0093		214.5	259.9
6	11.85	23 32	57.9		52 11	442	40	852	28	.2995	278	.405	8	722				227.6	273.0
7	11.92		53.7		48 39	402	39	878	26	.2700	295	.393	12	694				240.8	286.1
8	11.99		49.5		45 7	363	40	903	25	.2378	322	.379	14	667				254.0	299.1
9	12.06		45.5		41 35	323	40	926	23	.2030	348	.363	16	640				267.2	312.2
10	12.13		41.6		38 4	283	40	947	21	+1.463	371	.347	16	612		.0092		280.4	325.3
11	12.19		37.8		34 32	243	40	966	19	.329	134	.332	15	585				293.5	338.3
12	12.26		34.1		31 1	203	40	984	18	.195	134	.318	14	558				306.7	351.4
13	12.32		30.5		27 30	163	41	1.30099	15	1.061	134	.306	12	530				319.9	4.4
14	12.39		27.0		24 0	122	41	1.31013	14	0.926	135	.293	8	503				333.0	17.5
15	12.46		23.6		20 29	081	41	025	12	.791	135	.291	7	475		.0091		346.2	30.6
16	12.52		20.3		16 59	1.83040	41	035	10	.656	135	.286	5	448				359.4	43.6
17	12.59		17.2		13 29	1.82999	41	044	9	.521	135	.281	5	421				12.8	56.7
18	12.65		14.1		9 59	958	41	050	6	.386	135	.275	6	393				25.7	69.8
19	12.72		11.2		6 28	917	41	055	5	.250	136	.267	8	366				38.9	82.8
20	12.78		8.4	0	2 58	875	42	058	3	+0.115	135	.257	10	339		.0091		52.1	95.9
21	12.85		5.7	23	59 28	834	41	059	1	—0.021	136	.245	12	311				65.3	109.0
22	12.92		3.2		55 58	792	42	057	2	.156	135	.230	15	284				78.5	122.0
23	12.98	23 32	0.7		52 28	751	41	054	3	.292	136	.215	15	256				91.6	135.1
24	13.05	23 31	58.4		48 58	709	42	049	5	.427	135	.201	14	228		.0090		104.8	148.2
25	13.11		56.2		45 28	667	42	042	7	.562	135	.188	13	202				118.0	161.2
26	13.18		54.1		41 58	626	41	033	9	.697	135	.176	12	174				131.2	174.3
27	13.24		52.2		38 27	584	42	022	11	.832	135	.168	8	147				144.3	187.4
28	13.31		50.4		34 57	542	42	1.31009	13	0.967	135	.162	6	119		.0090		157.5	200.4
29	13.38		48.7		31 26	500	42	1.30994	15	1.101	134	.157	5	092				170.7	213.5
30	13.44	23 31	47.1	23	27 56	1.82458	42	1.30978	16	—1.235	134	+10.154	3	+3.6065				183.9	226.5
							41		18		134		4						

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

846.	Sid. time Wash.	G.		H.			$\log g.$		$\log h.$		$\frac{\log i.}{i}$		$f + \Delta f$		$t.$		$p.$	$\mathfrak{C}$	$\mathfrak{C} - \Gamma'$
	h.	*h. m. s.*		*h. m. s.*									*s.*		*years.*			°	°
Nov. 1	21.59	23 29 31.7	6.5	15 13 21		213	1.78801	30	1.28887	65	n 0.7997	63	+9.322	4	+3.1669	.0073		17.7	46.6
2	21.65		6.5	9 18		43	771	31	1.28952	66	.7934	66	.318	6	642			30.9	59.7
3	21.72		6.6	5 15		42	740	32	1.29018	66	.7868	66	.312	9	615			44.1	72.7
4	21.79		6.7	15 1 13		41	708	32	084	66	.7800	68	.303	11	587			57.3	85.5
5	21.85	23 29 5.1	6.7	14 57 12		41	676	32	150	66	.7730	70	.292	12	560			70.5	98.9
6	21.92	23 28 58.7	6.7	53 11		241	644	32	216	66	.7657	73	.280	13	532	.0072		83.6	111.9
7	21.98	52.0	6.8	49 10		41	612	33	282	66	.7581	76	.267	12	505			96.8	125.0
8	22.05	45.2	6.8	45 10		40	579	33	348	66	.7503	78	.255	10	478			110.0	138.1
9	22.11	38.4	6.8	41 11		39	545	34	413	65	.7422	81	.245	9	450			123.2	151.1
10	22.18	31.6	6.8	37 13		38	511	34	478	65	.7338	84	.236	5	423			136.3	164.2
11	22.25	24.8	6.8	33 15		238	476	35	542	64	.7251	87	.231	3	395	.0072		149.5	177.3
12	22.31	18.0	6.8	29 17		38	441	35	606	64	.7161	90	.228	2	368			162.7	190.3
13	22.38	11.2	6.8	25 20		37	406	35	669	63	.7067	94	.226	2	341			175.9	203.4
14	22.44	23 28 4.4	6.8	21 21		36	370	36	731	62	.6970	97	.224	3	313			189.0	216.4
15	22.51	23 27 57.6	6.8	17 28		36	333	37	793	62	.6870	100	.221	5	286			202.2	229.5
16	22.57	50.8	6.8	13 33		235	296	37	854	61	.6765	105	.216	8	259	.0071		215.4	242.6
17	22.64	44.0	6.8	9 38		35	259	37	914	60	.6657	108	.208	10	231			228.6	255.6
18	22.71	37.2	6.8	5 44		34	221	38	1.29973	59	.6544	113	.198	13	204			241.7	268.7
19	22.77	30.5	6.7	14 1 51		33	183	38	1.30031	58	.6427	117	.185	14	176			254.9	281.8
20	22.84	23.8	6.7	13 57 58		33	144	39	089	58	.6305	122	.171	16	149			268.1	294.8
21	22.90	17.1	6.7	54 5		233	105	39	145	56	.6178	127	.155	14	121	.0070		281.3	307.9
22	22.97	10.5	6.6	50 13		32	065	40	200	55	.6046	132	.141	12	094			294.5	321.0
23	23.03	23 27 3.9	6.6	46 22		31	1.78025	40	254	54	.5909	137	.129	11	067			307.6	334.0
24	23.10	23 26 57.4	6.5	42 31		31	1.77984	41	307	53	.5766	143	.118	7	040			320.8	347.1
25	23.16	51.0	6.4	38 40		31	943	41	358	51	.5616	150	.111	6	3.1012			334.0	0.2
26	23.23	44.6	6.4	34 50		230	902	41	408	50	.5459	157	.105	5	3.0985	.0070		347.2	13.2
27	23.30	38.3	6.3	31 1		29	860	42	456	48	.5295	164	.100	5	957			0.3	26.6
28	23.36	32.1	6.2	27 12		29	817	43	503	47	.5124	171	.095	6	930			13.5	39.4
29	23.43	25.9	6.2	23 23		29	774	43	548	45	.4943	181	.089	8	903			26.7	52.4
30	23.49	19.9	6.0	19 35		28	731	43	591	43	.4753	190	.081	10	875			39.9	65.5
Dec. 1	23.56	13.9	6.0	15 47		228	688	43	632	41	.4553	200	.071	12	848	.0069		53.0	78.6
2	23.63	8.0	5.9	11 59		28	644	44	672	40	.4342	211	.059	15	821			66.2	91.6
3	23.69	23 26 2.2	5.8	8 12		27	599	45	710	38	.4119	223	.044	15	793			79.4	104.7
4	23.76	23 25 56.5	5.7	4 25		27	554	45	746	36	.3881	238	.029	15	766			92.6	117.7
5	23.82	51.0	5.5	13 0 38		27	509	45	781	35	.3625	253	.014	15	738			105.7	130.8
6	23.89	45.5	5.5	12 56 52		226	464	45	813	32	.3362	266	+9.001	13	711	.0069		118.9	143.9
7	23.95	40.1	5.4	53 6		26	418	46	844	31	.3071	291	+8.990	11	684			132.1	157.0
8	0.02	34.8	5.3	49 20		26	372	46	873	29	.2760	311	.981	9	656			145.3	170.0
9	0.08	29.7	5.1	45 34		26	325	47	899	26	.2423	337	.975	6	629			158.4	183.1
10	0.15	24.7	5.0	41 49		25	278	47	924	25	n 0.2057	366	.971	4	601			171.6	196.1
11	0.22	19.8	4.9	38 4		225	231	47	946	22	—1.464	405	.967	4	574	.0068		184.8	209.2
12	0.28	15.1	4.7	34 19		25	184	47	967	21	.321	443	.963	6	547			198.0	222.3
13	0.35	10.5	4.6	30 34		25	136	48	1.30985	18	.178	443	.957	8	519			211.1	235.5
14	0.41	6.1	4.4	26 49		25	088	48	1.31002	17	1.035	443	.949	12	492			224.5	248.4
15	0.48	23 25 1.8	4.3	23 4		25	1.77040	48	017	15	0.891	441	.937	14	464			237....	261.5
16	0.54	23 24 57.6	4.2	19 20		224	1.76991	49	029	12	.747	441	.923	15	437	.0067		250.7	274.7
17	0.61	53.6	4.0	15 35		25	943	48	039	10	.603	441	.908	16	410			263.9	287.6
18	0.68	49.7	3.9	11 51		24	894	49	047	8	.459	444	.892	15	382			277.0	300.7
19	0.74	46.0	3.7	8 7		24	845	49	053	6	.314	445	.876	15	355			290.2	313.7
20	0.81	42.5	3.5	4 22		25	795	50	056	3	.170	444	.861	13	328			303.4	326.8
21	0.87	39.1	3.4	12 0 38		224	746	49	057	1	—0.025	445	.849	12	300	.0067		316.6	339.9
22	0.94	35.8	3.3	11 56 54		24	696	50	057	0	+0.120	445	.839	10	273			329.7	352.9
23	1.00	32.7	3.1	53 9		25	647	49	055	2	.265	445	.831	7	245			342.9	6.0
24	1.07	29.8	2.9	49 25		24	597	50	050	5	.410	445	.825	6	217			356.1	19.0
25	1.14	27.0	2.8	45 40		225	547	50	043	7	.555	445	.820	5	191			9.3	32.1
26	1.20	24.4	2.6	41 56		24	497	50	033	10	.699	444	.813	5	163	.0066		22....	45.2
27	1.27	21.9	2.5	38 11		25	447	50	022	11	.843	444	.805	5	136			35.6	58.2
28	1.33	19.6	2.3	34 26		25	397	50	1.31008	14	0.987	444	.795	10	109			48.8	71.5
29	1.40	17.5	2.1	30 41		225	347	50	1.30992	16	1.131	441	.783	12	081			62.0	84.4
30	1.46	15.5	2.0	26 56		25	297	50	974	18	.274	443	.768	15	054			75.2	97.4
31	1.53	23 24 13.7	1.8	23 11		25	1.76247	50	1.30954	20	+1.417	443	+8.753	15	+3.0926	.0066		88.5	110.5
			1.7			226		50		22		442		16					

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO **1850.0**.

Epoch 6h. 52m. mean time, Washington.

1846.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f+\Delta f$		*t.*		*p.*	ℂ	ℂ−Γ
	h.	*h. m.*	*s.*	*h. m.*	*s.*							*s.*		years.			°	°
Sept. 1	17.58	**23 32**	36.6	**19 30**	20	1.80954	25	**1.27827**	11	n **0.8810**	25	**+9.611**	9	**+3.3340**	.0081		**294.0**	**329.6**
2	17.65		37.3	26	12	229	25	783	11	.8787	25	.635	9	312			307.2	342.7
3	17.71		37.9	22	4	291	25	740	11	.8764	25	.628	9	285			320.3	355.8
4	17.77		38.4	17	55	179	25	694	11	.8788	25	.624	9	257			333.5	8.8
5	17.84		38.8	13	45	155	25	666	11	.8911	25	.622	9	230			346.7	21.9
6	17.91		39.1	9	35	131	25	623	11	.8931	25	.622	9	203	.0080		359.9	35.0
7	17.97		39.3	5	24	107	25	588	11	.8954	25	.621	9	175			13.0	48.0
8	18.04		39.4	**19** 1	13	084	25	554	11	.8973	25	.620	9	148			26.2	61.1
9	18.11		39.4	**18** 57	1	060	25	523	11	.8991	25	.617	9	121			39.4	74.2
10	18.17		39.2	52	49	037	25	493	11	.9008	25	.611	9	093			52.6	87.2
11	18.24		39.0	48	36	1.80014	25	466	11	.9023	25	.603	9	066	.0080		65.8	100.3
12	18.30		38.6	44	23	1.79992	25	441	11	.9037	25	.594	9	039			78.9	113.4
13	18.37		38.1	40	9	969	25	418	11	.9050	25	.584	9	**3.3011**			92.1	126.4
14	18.43		37.5	35	55	947	25	397	11	.9061	25	.574	9	**3.2984**			105.3	139.5
15	18.50		36.7	31	40	924	25	378	11	.9071	25	.566	9	956			118.5	152.2
16	18.57		35.8	27	25	902	25	362	11	.9079	25	.560	9	929	.0079		131.6	165.6
17	18.63		34.8	23	10	880	25	348	11	.9087	25	.556	9	901			144.8	178.7
18	18.70		33.7	18	55	857	25	336	11	.9093	25	.555	9	874			158.0	191.8
19	18.76		32.4	14	39	836	25	327	11	.9098	25	.554	9	847			171.2	204.8
20	18.83		31.0	10	23	815	25	320	11	.9102	25	.558	9	819			184.3	217.9
21	18.89		29.4	6	7	793	25	315	11	.9104	25	.559	9	792	.0078		197.5	230.9
22	18.96		27.7	**18** 1	51	772	25	313	11	.9106	25	.558	9	761			210.7	244.0
23	19.03		25.9	**17** 57	35	750	25	313	11	.9106	25	.555	9	737			223.9	257.1
24	19.09		23.9	53	18	728	25	315	11	.9104	25	.549	9	710			237.0	270.1
25	19.16		21.8	49	1	707	25	320	11	.9101	25	.541	9	682			250.2	283.2
26	19.22		19.6	44	41	685	25	327	11	.9098	25	.531	9	655	.0077		263.4	296.3
27	19.29		17.2	40	28	664	25	337	11	.9092	25	.520	9	628			276.6	309.3
28	19.35		14.7	36	11	643	25	349	11	.9086	25	.509	9	600			289.8	322.4
29	19.42		12.0	31	54	621	25	363	11	.9078	25	.500	9	573			302.9	335.5
30	19.49		9.2	27	37	599	25	380	11	.9069	25	.493	9	545			316.1	348.5
Oct. 1	19.55		6.2	23	21	578	25	400	11	.9059	25	.488	9	518	.0077		329.3	1.6
2	19.62	**23 32**	3.1	19	4	556	25	421	11	.9047	25	.486	9	491			342.5	14.7
3	19.68	**23 31**	59.9	14	47	534	25	445	11	.9034	25	.485	9	463			355.6	27.7
4	19.75		56.5	10	31	512	25	471	11	.9019	25	.485	9	436			8.8	40.8
5	19.81		53.0	6	15	490	25	499	11	.9004	25	.484	9	409			22.0	53.8
6	19.88		49.3	**17** 1	59	468	25	529	11	.8987	25	.482	9	381	.0076		35.2	66.9
7	19.95		45.5	**16** 57	43	445	25	562	11	.8968	25	.477	9	354			48.3	80.0
8	20.01		41.6	53	28	423	25	596	11	.8948	25	.470	9	326			61.5	93.0
9	20.08		37.5	49	13	400	25	633	11	.8927	25	.461	9	299			74.7	106.1
10	20.14		33.3	44	58	377	25	672	11	.8905	25	.450	9	272			87.9	119.2
11	20.21		28.9	40	44	354	25	713	11	.8880	25	.440	9	244	.0076		101.0	132.2
12	20.27		24.4	36	30	331	25	755	11	.8855	25	.430	9	217			114.2	145.3
13	20.34		19.8	32	16	307	25	800	11	.8828	25	.423	9	190			127.4	158.4
14	20.41		15.1	28	2	283	25	846	11	.8799	25	.418	9	163			140.6	171.4
15	20.47		10.2	23	49	259	25	894	11	.8769	25	.416	9	135			153.7	184.5
16	20.54		5.2	19	36	235	25	944	11	.8738	25	.415	9	107	.0075		166.9	197.6
17	20.60	**23 31**	0.1	15	24	211	25	**1.27995**	11	.8704	25	.416	9	080			180.1	210.6
18	20.67	**23 30**	54.9	11	12	186	25	**1.28047**	11	.8670	25	.416	9	053			193.3	223.7
19	20.73		49.6	7	1	161	25	101	11	.8633	25	.415	9	**3.2025**			206.4	236.8
20	20.80		44.1	**16** 2	50	135	25	156	11	.8595	25	.412	9	**3.1998**			219.6	249.8
21	20.87		38.6	**15** 58	39	109	25	212	11	.8555	25	.406	9	970	.0074		232.8	262.9
22	20.93		32.9	54	29	083	25	269	11	.8514	25	.397	9	943			246.0	276.0
23	21.00		27.2	50	20	057	25	327	11	.8471	25	.386	9	916			259.2	289.0
24	21.06		21.3	46	11	030	25	386	11	.8426	25	.374	9	888			273.2	302.1
25	21.13		15.4	42	3	1.79003	25	446	11	.8379	25	.361	9	861			285.5	315.1
26	21.19		9.4	37	55	1.78975	25	507	11	.8330	25	.350	9	834	.0074		298.7	328.2
27	21.26	**23 30**	3.3	33	48	947	25	569	11	.8280	25	.341	9	806			311.9	341.3
28	21.33	**23 29**	57.1	29	42	919	25	631	11	.8227	25	.334	9	779			325.0	354.3
29	21.39		50.8	25	36	890	25	694	11	.8173	25	.329	9	751			338.2	7.4
30	21.46		44.5	21	30	861	25	758	11	.8116	25	.326	9	724			351.4	20.5
31	21.52	**23 29**	38.1	**15** 17	26	1.78831	25	**1.28822**	11	n **0.8058**	25	**+9.325**	9	**+3.1697**	.0073		4.6	33.5

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1846.	Sid. time Wash.	G.		H.		$\log g$.		$\log h$.		$\frac{\log i}{i}$		$f + \Delta_c f$		t.		p.	$\mathfrak{C}$	$\mathfrak{C} - \Gamma$
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*			°	°
Nov. 1	21.59	23 29 31.7	6.5	15 13 21	243	1.78801	39	1.28887	65	n 0.7997	63	+9.322	4	+3.1669	.0073		17.7	46.6
2	21.65	25.2	6.5	9 18	43	771	31	1.28952	66	.7934	66	.318	6	612			30.9	59.7
3	21.72	18.7	6.6	5 15	42	740	32	1.29018	66	.7868	68	.312	9	615			44.1	72.7
4	21.79	12.1	6.7	15 1 13	41	708	32	084	66	.7800	70	.303	11	587			57.3	85.8
5	21.85	23 29 5.4	6.7	14 57 12	211	676	32	150	66	.7730	73	.292	12	560			70.5	98.9
6	21.92	23 28 58.7	6.7	53 11	41	644	32	216	66	.7657	76	.280	13	532	.0072		83.6	111.9
7	21.98	52.0	6.8	49 10	40	612	33	282	66	.7581	78	.267	12	505			96.8	125.0
8	22.05	45.2	6.8	45 10	39	579	34	348	65	.7503	81	.255	10	478			110.0	138.1
9	22.11	38.4	6.8	41 11	39	545	34	413	65	.7422	84	.245	10	450			123.2	151.1
10	22.18	31.6	6.8	37 13	38	511	34	478	65	.7338	87	.236	9	423			136.3	164.2
11	22.25	24.8	6.8	33 15	238	476	35	542	64	.7251	90	.231	5	395	.0072		149.5	177.3
12	22.31	18.0	6.8	29 17	38	441	35	606	64	.7161	94	.228	3	368			162.7	190.3
13	22.38	11.2	6.8	25 20	37	406	35	669	63	.7067	97	.226	2	341			175.9	203.4
14	22.44	23 28 4.4	6.8	21 24	36	370	36	731	62	.6970	97	.224	2	313			189.0	216.4
15	22.51	23 27 57.6	6.8	17 28	36	333	37	793	62	.6870	100	.221	3	286			202.2	229.5
16	22.57	50.8	6.8	13 33	235	296	37	854	61	.6765	105	.216	5	259	.0071		215.4	242.6
17	22.64	44.0	6.8	9 38	35	259	37	914	60	.6657	108	.208	8	231			228.6	255.6
18	22.71	37.2	6.8	5 44	34	221	38	1.29973	59	.6544	113	.198	10	204			241.7	268.7
19	22.77	30.5	6.7	14 1 51	33	183	38	1.30031	58	.6427	117	.185	13	176			254.9	281.8
20	22.84	23.8	6.7	13 57 58	33	144	39	089	58	.6305	122	.171	14	149			268.1	294.8
21	22.90	17.1	6.7	54 5	233	105	39	145	56	.6178	127	.155	16	121	.0070		281.3	307.9
22	22.97	10.5	6.6	50 13	32	065	40	200	55	.6046	132	.141	14	094			294.5	321.0
23	23.03	23 27 3.9	6.6	46 22	31	1.78025	40	254	54	.5909	137	.129	12	067			307.6	334.0
24	23.10	23 26 57.4	6.5	42 31	31	1.77984	41	307	53	.5766	143	.118	11	040			320.8	347.1
25	23.16	51.0	6.4	38 40	31	943	41	358	51	.5616	150	.111	7	3.1012			334.0	0.2
26	23.23	44.6	6.4	34 50	230	902	41	408	50	.5459	157	.105	6	3.0985	.0070		347.2	13.2
27	23.30	38.3	6.3	31 1	29	860	42	456	48	.5295	164	.100	3	957			0.3	26.6
28	23.36	32.1	6.2	27 12	29	817	43	503	47	.5124	171	.095	5	930			13.5	39.4
29	23.43	25.9	6.2	23 23	29	774	43	548	45	.4943	181	.089	6	903			26.7	52.4
30	23.49	19.9	6.0	19 35	28	731	43	591	43	.4753	190	.081	8	875			39.9	65.5
Dec. 1	23.56	13.9	6.0	15 47	228	688	43	632	41	.4553	200	.071	10	848	.0069		53.0	78.6
2	23.63	8.0	5.9	11 59	28	644	44	672	40	.4342	211	.059	12	821			66.2	91.6
3	23.69	23 26 2.2	5.8	8 12	27	599	45	710	38	.4119	223	.044	15	793			79.4	104.7
4	23.76	23 25 56.5	5.7	4 25	27	554	45	746	36	.3881	238	.029	15	766			92.6	117.7
5	23.82	51.0	5.5	13 0 38	27	509	45	781	35	.3628	253	.014	15	738			105.7	130.8
6	23.89	45.5	5.5	12 56 52	226	464	45	813	32	.3362	266	+9.001	13	711	.0069		118.9	143.9
7	23.95	40.1	5.4	53 6	26	418	46	844	31	.3071	291	+8.990	11	684			132.1	157.0
8	0.02	34.8	5.3	49 20	26	372	46	873	29	.2760	311	.981	9	656			145.3	170.0
9	0.08	29.7	5.1	45 34	26	325	47	899	26	.2423	337	.975	6	629			158.4	183.1
10	0.15	24.7	5.0	41 49	25	278	47	924	25	n 0.2057	366	.971	4	601			171.6	196.1
11	0.22	19.8	4.9	38 4	225	231	47	946	22	−1.464	405	.967	4	574	.0068		184.8	209.2
12	0.28	15.1	4.7	34 19	25	184	47	967	21	.321	143	.963	6	547			198.0	222.3
13	0.35	10.5	4.6	30 34	25	136	48	1.30985	18	.178	143	.957	8	519			211.1	235.3
14	0.41	6.1	4.4	26 49	25	088	48	1.31002	17	1.035	143	.949	12	492			224.3	248.4
15	0.48	23 25 1.8	4.3	23 4	25	1.77040	48	017	15	0.891	144	.937	11	464			237.5	261.5
16	0.54	23 24 57.6	4.2	19 20	221	1.76991	49	029	12	.747	144	.923	15	437	.0067		250.7	274.5
17	0.61	53.6	4.0	15 35	25	943	49	039	10	.603	144	.908	16	410			263.9	287.6
18	0.68	49.7	3.9	11 51	24	894	49	047	8	.459	144	.892	16	382			277.0	300.7
19	0.74	46.0	3.7	8 7	24	845	49	053	6	.314	145	.876	15	355			290.2	313.7
20	0.81	42.5	3.5	4 22	25	795	50	056	3	.170	144	.861	15	328			303.4	326.8
21	0.87	39.1	3.4	12 0 38	224	746	49	057	1	−0.025	145	.849	12	300	.0067		316.6	339.9
22	0.94	35.8	3.3	11 56 51	24	696	50	057	0	+0.120	145	.839	16	273			329.7	352.9
23	1.00	32.7	3.1	53 9	25	647	49	055	2	.265	145	.831	7	245			342.9	6.1
24	1.07	29.8	2.9	49 25	24	597	50	050	5	.410	145	.825	6	218			356.1	19.0
25	1.14	27.0	2.8	45 40	225	547	50	043	7	.555	145	.820	5	191			9.3	32.1
26	1.20	24.4	2.6	41 56	24	497	50	033	10	.699	144	.813	7	163	.0066		22.4	45.2
27	1.27	21.9	2.5	38 11	25	447	50	022	11	.843	144	.805	8	136			35.6	58.2
28	1.33	19.6	2.3	34 26	25	397	50	1.31008	14	0.987	141	.795	10	109			48.8	71.3
29	1.40	17.5	2.1	30 41	225	347	50	1.30992	16	1.131	141	.783	12	081			62.0	84.4
30	1.46	15.5	2.0	26 56	25	297	50	974	18	.271	143	.768	15	054			75.2	97.4
31	1.53	23 24 13.7	1.8	11 23 11	25	1.76247	50	1.30954	20	+1.417	143	+8.753	15	+3.0026	.0066		88.3	110.5
			1.7		236		50		22		142		16					

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1847.	Sid. time Wash.	G.		H.			log g.		log h.		log i.		$f + \Delta_t f$		t.	p.	☾	☾−☿
	h.	h. m. s.		h. m. s.									s.		years.		°	°
Jan. 1	1.60	23 24 12	2	11 19 25	225		1.76197	50	1.30932	24	0.1926	378	+8.737	14	+3.0000	.0066	101.5	123.6
2	1.66	10	1	15 40	26		147	50	908	26	.2304	346	.723	12	2.9975		114.7	136.6
3	1.73	9	1	11 54	27		097	50	882	28	.2650	320	.711	9	945		127.9	149.7
4	1.79	8	1	8 7	26		1.76047	50	854	30	.2970	297	.702	7	918		141.0	162.8
5	1.86	7	1	4 21	227		1.75997	49	824	32	.3267	276	.695	5	890		154.2	175.8
6	1.93	6	1	11 0 34	24		948	49	792	34	.3543	259	.690	3	863	.0065	167.4	188.9
7	1.99	5		10 56 46	27		899	49	758	36	.3802	243	.687	4	836		180.6	202.0
8	2.06	5		52 59	28		850	49	722	37	.4045	228	.683	5	808		193.7	215.0
9	2.12	4		49 11	29		801	49	685	40	.4273	216	.678	7	781		206.9	228.1
10	2.19	4		45 22	229		752	49	645	41	.4489	201	.671	10	753		220.1	241.2
11	2.25	4		41 33	29		703	49	604	43	.4693	194	.661	12	726	.0064	233.3	254.2
12	2.32	4		37 44	30		654	48	561	45	.4887	184	.649	14	699		246.5	267.3
13	2.38	4		33 54	30		606	48	516	46	.5071	175	.635	15	671		259.6	280.4
14	2.45	4		30 4	31		558	48	470	48	.5246	167	.620	16	644		272.8	293.4
15	2.52	5		26 13	231		510	47	422	50	.5413	160	.604	14	617		286.0	306.5
16	2.58	5	1	22 22	32		463	47	372	51	.5573	153	.590	12	589	.0064	299.2	319.5
17	2.65	6	1	18 30	32		416	47	321	53	.5726	146	.578	9	562		312.3	332.6
18	2.72	7	1	14 38	33		369	47	268	54	.5872	140	.569	7	534		325.5	345.7
19	2.78	8	1	10 45	33		322	46	214	55	.6012	134	.562	5	507		338.7	358.7
20	2.84	9	1	6 52	234		276	46	159	55	.6146	129	.557	4	480		351.9	11.8
21	2.91	10	1	10 2 58	34		230	46	103	58	.6275	124	.553	4	452	.0063	5.0	24.9
22	2.98	11	1	9 59 4	35		184	46	1.30045	58	.6399	119	.549	6	425		18.2	37.9
23	3.04	12	1	55 9	35		139	45	1.29987	59	.6518	114	.543	8	398		31.4	51.0
24	3.11	14	2	51 14	35		094	45	928	61	.6632	110	.535	10	370		44.6	64.1
25	3.17	15	1	47 18	36		049	45	867	61	.6742	107	.525	12	343		57.7	77.1
26	3.24	17	2	43 21	237		1.75005	44	806	61	.6849	102	.513	14	315	.0063	70.9	90.2
27	3.30	19	2	39 24	37		1.74962	43	744	63	.6951	98	.499	13	288		84.1	103.3
28	3.37	20	1	35 26	38		918	44	681	63	.7049	95	.486	13	261		97.3	116.3
29	3.44	22	2	31 28	38		875	43	618	64	.7144	91	.473	11	233		110.4	129.4
30	3.50	24	2	27 29	39		833	42	554	65	.7235	89	.462	8	206		123.6	142.5
31	3.57	26	2	23 29	240		791	42	489	65	.7324	89	.454	5	179	.0062	136.8	155.5
Feb. 1	3.63	28	2	19 29	40		749	42	424	66	.7409	85	.449	3	151		150.0	168.6
2	3.70	30	2	15 28	41		708	41	358	66	.7492	83	.446	2	124		163.2	181.6
3	3.76	32	2	11 26	42		668	40	292	66	.7571	79	.444	1	096		176.3	194.7
4	3.83	34	2	7 24	42		628	40	226	66	.7647	76	.443	2	069		189.5	207.8
5	3.90	36	2	9 3 21	243		588	40	160	66	.7721	74	.441	4	042	.0061	202.7	220.8
6	3.96	38	2	8 59 17	44		549	39	094	67	.7792	71	.437	6	2.9014		215.9	233.9
7	4.03	40	2	55 13	44		510	39	1.29027	66	.7861	69	.431	9	2.8987		229.0	247.0
8	4.09	42	3	51 8	45		471	39	1.28961	66	.7927	66	.422	11	959		242.2	260.0
9	4.16	45	2	47 2	46		433	38	895	66	.7991	64	.411	13	932		255.4	273.1
10	4.22	47	2	42 56	246		396	37	829	66	.8053	62	.398	13	905	.0061	268.6	286.2
11	4.29	49	2	38 49	47		359	37	764	65	.8112	59	.385	13	877		281.7	299.2
12	4.36	51	2	34 41	48		323	36	699	64	.8170	58	.373	12	850		294.9	312.3
13	4.42	53	2	30 33	48		287	36	635	64	.8225	55	.363	10	823		308.1	325.4
14	4.49	55	2	26 24	49		251	36	571	64	.8278	53	.356	7	.795		321.3	338.4
15	4.55	57	2	22 14	250		216	35	508	63	.8329	51	.351	5	768	.0060	334.4	351.5
16	4.62	23 24 59	2	18 4	50		182	34	446	62	.8378	49	.348	3	741		347.6	4.6
17	4.68	23 25 1	2	13 53	51		148	34	385	61	.8425	47	.346	2	713		0.8	17.6
18	4.75	3	2	9 42	51		114	34	324	59	.8471	46	.345	1	686		14.0	30.7
19	4.82	5	2	5 30	52		081	33	265	59	.8514	43	.342	3	658		27.2	43.8
20	4.88	6	1	8 1 17	253		048	33	207	58	.8556	42	.337	5	631	.0060	40.3	56.8
21	4.95	8	2	7 57 4	53		1.74016	32	150	57	.8596	40	.330	7	604		53.5	69.9
22	5.01	10	2	52 50	54		1.73984	32	095	55	.8635	39	.321	9	576		66.7	83.0
23	5.08	11	1	48 36	54		953	31	1.28041	54	.8671	36	.311	10	549		79.9	96.0
24	5.14	13	2	44 22	254		922	31	1.27988	53	.8706	35	.299	12	521	.0059	93.0	109.1
25	5.21	14	1	40 7	55		891	31	937	51	.8740	34	.289	10	494		106.2	122.1
26	5.28	15	1	35 51	56		861	30	887	50	.8772	32	.280	9	467		119.4	135.2
27	5.34	16	1	31 35	56		831	30	839	48	.8802	30	.273	7	439		132.6	148.3
28	5.41	23 25 17	1	7 27 19	256		1.73801	30	1.27793	46	0.8831	29	+8.269	4	+2.8412	.0059	145.7	161.3
					257			29		44		27		1				

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1847.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_t f$		*t.*	*p.*	☾	☾ − ☿
	h.	h. m. s.		h. m. s.								s.		years.		°	°
Mar. 1	5.47	23 25 18	1	7 23 2	257	1.73772	28	1.27749	43	0.8858	25	+8.268	1	+2.8385	.0059	158.9	174.4
2	5.54	19	1	18 45	57	744	29	706	41	.8883	24	.269	1	357		172.1	187.5
3	5.60	20		14 28	58	715	28	665	38	.8907	23	.270	0	330		185.3	200.5
4	5.67	20	1	10 10	58	687	28	627	37	.8930	21	.270	1	302		198.4	213.6
5	5.74	21		5 52	259	659	27	590	33	.8951	20	.269	3	275		211.6	226.7
6	5.80	21		7 1 33	58	632	27	555	32	.8971	19	.266	6	248	.0058	224.8	239.7
7	5.87	21		6 57 15	59	605	27	523	30	.8990	17	.260	8	220		238.0	252.8
8	5.93	21		52 56	60	578	27	493	28	.9007	15	.252	10	193		251.2	265.9
9	6.00	21		48 36	59	551	26	465	26	.9022	15	.242	11	166		264.3	278.9
10	6.06	21		44 17	259	525	26	439	23	.9037	13	.231	11	138		277.5	292.0
11	6.13	21	1	39 58	60	499	26	416	21	.9050	11	.220	9	111	.0058	290.7	305.1
12	6.20	20		35 38	60	473	26	395	19	.9061	10	.211	6	083		303.9	318.1
13	6.26	20	1	31 18	60	447	25	376	16	.9071	9	.205	4	056		317.0	331.2
14	6.33	19	1	26 58	60	422	26	360	14	.9080	8	.201	2	029		330.2	344.3
15	6.39	18	1	22 38	260	396	25	346	12	.9088	6	.199	1	2.8001		343.4	357.3
16	6.46	17	2	18 18	60	371	25	334	9	.9094	5	.198	0	2.7974	.0057	356.8	10.4
17	6.53	15	1	13 58	60	346	25	325	7	.9099	3	.198	0	947		9.7	23.4
18	6.59	14	2	9 38	60	321	25	318	4	.9102	2	.197	1	919		22.9	36.5
19	6.66	12	2	5 18	59	296	25	314	2	.9104	1	.195	2	892		36.1	49.6
20	6.72	10	2	6 0 59	260	271	24	312	1	.9105	0	.190	5	864		49.3	62.6
21	6.79	8	2	5 56 39	59	247	25	313	3	.9105	1	.183	7	837	.0056	62.4	75.7
22	6.85	6	2	52 20	59	222	24	316	6	.9104	3	.173	10	810		75.6	88.8
23	6.92	4	3	48 1	59	198	25	322	8	.9101	5	.163	10	782		88.8	101.8
24	6.99	23 25 1	2	43 42	59	173	24	330	10	.9096	5	.153	10	755		102.0	114.9
25	7.05	23 24 59	3	39 23	258	149	25	340	13	.9091	7	.144	9	727		115.1	128.0
26	7.12	56	3	35 5	58	124	24	353	15	.9084	8	.137	7	700	.0056	128.3	141.0
27	7.18	53	3	30 47	58	100	25	368	17	.9076	10	.133	4	673		141.5	154.1
28	7.25	50	4	26 29	57	075	24	385	20	.9066	11	.132	1	645		154.7	167.2
29	7.31	46	3	22 12	57	051	25	405	22	.9055	12	.132	0	618		167.8	180.2
30	7.38	43	4	17 55	256	026	25	427	24	.9043	13	.134	2	591		181.0	193.3
31	7.45	39	4	13 39	56	1.73001	25	451	27	.9030	15	.135	1	563	.0055	194.2	206.4
Apr. 1	7.51	35	4	9 23	56	1.72976	25	478	29	.9015	16	.135	0	536		207.4	219.4
2	7.58	31	4	5 7	55	951	25	507	31	.8999	17	.133	2	508		220.6	232.5
3	7.64	27	4	5 0 52	54	926	25	538	32	.8982	19	.128	5	481		233.7	245.6
4	7.71	23	4	4 56 38	254	901	25	570	35	.8963	20	.120	8	454		246.9	258.6
5	7.77	19	5	52 24	54	876	26	605	37	.8943	21	.110	10	426	.0055	260.1	271.7
6	7.84	14	5	48 10	53	850	26	642	39	.8922	23	.099	11	399		273.3	284.7
7	7.91	9	5	43 57	53	824	26	681	40	.8899	24	.089	10	372		286.4	297.8
8	7.97	23 24 4	5	39 45	52	798	26	721	42	.8875	26	.079	10	344		299.6	310.9
9	8.04	23 23 59	5	35 34	251	772	26	763	44	.8849	27	.071	8	317		312.8	323.9
10	8.10	54	5	31 23	51	746	27	807	46	.8822	28	.066	5	289	.0054	326.0	337.0
11	8.17	49	6	27 12	50	719	27	853	47	.8794	30	.063	3	262		339.1	350.1
12	8.23	43	5	23 2	49	692	27	900	49	.8764	32	.061	2	235		352.3	3.1
13	8.30	38	6	18 53	48	665	27	949	50	.8732	32	.060	1	207		5.5	16.2
14	8.36	32	6	14 45	248	637	28	1.27999	51	.8700	32	.059	1	180		18.7	29.3
15	8.43	26	6	10 37	47	609	28	1.28050	53	.8665	35	.056	3	152	.0054	31.9	42.3
16	8.50	20	6	6 30	46	581	28	103	54	.8629	36	.050	6	125		45.0	55.4
17	8.56	14	4	2 24	45	552	29	157	56	.8591	38	.043	7	098		58.2	68.5
18	8.63	8	6	3 58 19	45	523	29	213	56	.8552	39	.034	9	070		71.4	81.5
19	8.69	23 23 1	7	54 14	244	494	29	269	58	.8512	40	.023	11	043		84.6	94.6
20	8.76	23 22 55	6	50 10	43	465	29	327	58	.8470	42	.011	12	2.7016	.0053	97.7	107.7
21	8.82	48	7	46 7	42	435	30	385	59	.8426	44	8.000	11	2.6988		110.9	120.7
22	8.89	41	7	42 5	41	405	30	444	60	.8380	46	7.991	9	961		124.1	133.8
23	8.96	35	6	38 4	241	374	31	504	60	.8332	48	.985	6	933		137.3	146.9
24	9.02	28	7	34 3	40	343	31	564	60	.8283	49	.981	4	906	.0053	150.4	159.9
25	9.09	21	7	30 3	39	311	32	625	61	.8233	50	.979	2	879		163.6	173.0
26	9.15	14	7	26 4	38	279	32	687	62	.8180	53	.979	0	851		176.8	186.0
27	9.22	7	7	22 6	237	247	32	749	62	.8125	55	.979	0	824		190.0	199.1
28	9.28	23 22 0	8	18 9	37	214	33	812	63	.8069	56	.978	1	797	.0053	203.1	212.2
29	9.35	23 21 52	7	14 12	36	181	33	875	63	.8010	59	.975	3	770		216.3	225.2
30	9.42	23 21 45	7	3 10 16	234	1.72147	34	1.28938	64	0.7949	61	+7.969	6	+2.6742	.0052	229.5	238.3
											62		9				

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. meantime, Washington.

1847.	Sid. Time Wash.	G.	H.	*log g.*	*log h.*	$\frac{\log i.}{i.}$	$f + \Delta_2 f$	*t.*	*p.*	ℭ	ℭ − Γ
	h.	*h. m. s.*	*h. m s.*				*s.*	*years.*		°	°
May 1	2.48	23 21 38	3 6 22	1.72113	1.29002	0.7887	+ 7.960	+2.6711	.0052	242.7	251.4
2	2.55	20	2 27	078	065	.7822	.948	687		255.9	264.4
3	2.61	23	2 58 34	013	128	.7755	.936	659		269.0	277.5
4	2.68	15	51 41	1.72008	191	.7686	.923	652		282.2	290.6
5	2.74	7	50 50	1.71972	255	.7611	.911	605		295.4	303.6
6	2.81	23 21 0	46 59	935	317	.7540	.900	578	.0052	308.6	316.7
7	2.88	23 20 52	43 7	898	381	.7463	.892	550		321.7	329.8
8	2.94	45	39 19	861	443	.7384	.886	523		334.9	342.8
9	3.01	37	35 30	823	505	.7302	.882	495		348.1	355.9
10	3.07	29	31 42	779	566	.7218	.879	468		1.3	9.0
11	3.13	22	27 55	736	627	.7130	.876	441	.0051	14.4	22.0
12	3.20	14	24 7	706	687	.7040	.872	413		27.6	35.1
13	3.27	23 20 6	20 22	666	747	.6946	.865	386		40.8	48.2
14	3.34	23 19 58	16 37	626	806	.6848	.856	358		54.0	61.2
15	3.40	51	12 53	585	864	.6747	.841	321		67.2	74.3
16	3.47	43	9 9	544	922	.6643	.831	304	.0050	80.3	87.3
17	3.53	35	5 25	502	1.29979	.6535	.817	276		93.5	100.4
18	3.60	28	2 1 43	460	1.30034	.6423	.804	249		106.7	113.5
19	3.66	20	1 58 1	417	089	.6307	.792	222		119.9	126.5
20	3.73	13	57 20	373	143	.6187	.782	194		133.0	139.6
21	3.80	23 19 5	50 40	329	195	.6062	.775	167	.0050	146.2	152.7
22	3.86	23 18 58	47 0	285	246	.5932	.771	139		159.4	165.7
23	3.93	50	43 20	241	296	.5797	.768	112		172.6	178.8
24	3.99	43	39 42	196	345	.5656	.766	085		185.7	191.9
25	4.06	35	56 4	150	392	.5509	.763	057		198.9	204.9
26	4.12	28	32 26	101	438	.5356	.758	030	.0049	212.1	218.0
27	4.19	21	28 49	057	483	.5196	.751	2.6003		225.3	231.1
28	4.26	14	25 13	1.71010	526	.5029	.741	2.5975		238.4	244.1
29	4.32	7	21 37	1.70963	568	.4855	.729	948		251.6	257.2
30	4.39	23 18 0	18 1	915	608	.4672	.715	920		264.8	270.3
31	4.45	23 17 53	11 26	867	647	.4478	.709	893	.0049	278.0	283.3
June 1	4.52	46	16 51	818	684	.4275	.685	866		291.1	296.4
2	4.58	40	7 17	769	719	.4061	.672	838		304.3	309.5
3	4.65	33	3 43	720	753	.3835	.661	811		317.5	322.5
4	4.71	27	1 0 10	670	785	.3595	.652	784		330.7	335.6
5	4.78	21	0 56 37	620	816	.3360	.646	756	.0048	343.8	348.6
6	4.84	14	53 4	569	845	.3066	.641	729		357.0	1.7
7	4.91	8	49 31	518	872	.2774	.636	701		10.2	14.8
8	4.97	23 17 2	45 59	467	897	.2460	.630	674		23.4	27.8
9	12.04	23 16 57	42 27	415	920	0.2119	.622	647		36.6	40.9
10	12.11	51	38 55	363	942	+1.496	.612	619	.0048	49.7	54.0
11	12.18	45	35 24	311	962	.362	.600	592		62.9	67.0
12	12.24	40	31 53	258	980	.228	.586	565		76.1	80.1
13	12.31	34	28 22	205	1.39996	1.094	.570	537		89.3	93.2
14	12.37	29	24 51	152	1.31010	0.959	.555	510		102.4	106.2
15	12.44	24	21 20	099	023	.824	.541	482	.0047	115.6	119.3
16	12.51	29	17 50	1.70045	031	.689	.530	455		128.8	132.4
17	12.57	15	14 19	1.69991	043	.554	.521	428		142.0	145.4
18	13.04	10	10 49	937	050	.419	.514	400		155.1	158.5
19	13.10	6	7 19	883	055	.284	.509	373		168.3	171.6
20	13.17	23 16 1	3 14	828	058	.14	.506	346	.0047	181.5	184.6
21	13.23	23 15 57	0 6 19	771	059	+0.012	.503	318		194.7	197.7
22	13.30	53	23 56 19	719	058	− 0.128	.498	291		207.8	210.8
23	13.37	49	53 19	664	056	.258	.491	263		221.0	223.8
24	13.43	46	49 19	609	051	.391	.481	236		234.2	236.9
25	13.50	42	46 19	554	045	.529	.469	209	.0046	247.4	249.9
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.67	.451	181		260.6	263.0
27	[illegible]	[illegible]	[illegible]	443	[illegible]	.79	.429	154		273.7	276.1
28	[illegible]	[illegible]	[illegible]	387	[illegible]	0.933	.423	126		286.9	289.1
29	[illegible]	[illegible]	[illegible]	332	1.31 [illegible]	1.068	.413	099		300.1	302.2
30	14.12	23 15 21	23 25 48	1.67276	1.33 [illegible]	−1.242	+ 7.397	+2.5072	.0046	313.3	315.3

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1847.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f+\Delta_t f$		*t.*	*p.*	☾	☾−☿
	h.	*h. m. s.*		*h. m. s.*								*s*				°	°
July 1	13.19	23 15 25	3	23 25 17	211	1.69220	55	1.30966	19	n 0.1257	414	+7.388	7	+2.5044	.0046	326.4	328.3
2	13.56	22	2	21 46	11	165	56	947	22	.1671	376	.381	6	017		339.6	341.4
3	13.62	20	2	18 15	11	109	55	925	23	.2047	345	.375	5	990		352.8	354.5
4	13.69	18	2	14 44	12	1.69054	56	902	25	.2392	319	.370	5	962		6.0	7.5
5	13.75	16	1	11 12	211	1.68998	55	877	27	.2711	296	.365	7	935		19.1	20.6
6	13.82	15	2	7 41	12	943	56	850	28	.3007	276	.358	9	907	.0045	32.3	33.7
7	13.89	13	1	4 9	13	887	55	822	30	.3283	258	.349	12	880		45.5	46.7
8	13.95	12	1	23 0 36	13	832	56	792	30	.3541	243	.337	13	853		58.7	59.8
9	14.02	11	1	22 57 3	13	776	55	760	32	.3784	228	.324	15	825		71.9	72.9
10	14.08	10	1	53 30	213	721	55	727	33	.4012	217	.309	15	798		85.0	85.9
11	14.15	9	1	49 57	14	666	55	692	35	.4229	206	.294	14	771	.0045	98.2	99.0
12	14.21	8	1	46 23	14	611	54	655	37	.4435	194	.280	12	743		111.4	112.1
13	14.28	7		42 49	14	557	55	617	38	.4629	184	.268	9	716		124.6	125.1
14	14.34	7		39 14	15	502	54	577	40	.4813	175	.259	7	688		137.7	138.2
15	14.41	6		35 39	215	448	54	536	41	.4988	169	.252	4	651		150.9	151.2
16	14.48	6		32 4	16	394	54	493	43	.5157	160	.248	3	634	.0044	164.1	164.3
17	14.55	6		28 28	16	340	54	449	44	.5317	154	.245	2	606		177.3	177.4
18	14.61	6		24 51	17	286	54	404	45	.5471	148	.243	3	579		190.4	190.4
19	14.67	7		21 15	16	232	53	357	47	.5619	141	.240	5	551		203.6	203.5
20	14.74	7		17 37	18	179	53	309	48	.5760	135	.235	8	524		216.8	216.6
21	14.80	7	1	13 59	218	126	52	260	49	.5896	130	.227	11	497	.0044	230.0	229.6
22	14.87	8	1	10 21	18	074	53	209	51	.6026	125	.216	12	469		243.1	242.7
23	14.94	9	1	6 42	19	1.68021	53	157	52	.6151	121	.204	14	442		256.3	255.8
24	15.00	10	1	22 3 3	19	1.67969	53	104	53	.6272	117	.190	15	415		269.5	268.8
25	15.07	11	1	21 59 23	20	918	51	1.30050	54	.6389	112	.175	13	387		282.7	281.9
26	15.13	12	1	55 42	221	866	52	1.20995	55	.6501	108	.162	11	360	.0043	295.8	295.0
27	15.20	13	1	52 1	21	815	51	939	56	.6609	105	.151	9	332		309.0	308.0
28	15.26	14	1	48 19	22	765	50	883	56	.6714	101	.142	6	305		322.2	321.1
29	15.33	15	1	44 36	23	714	51	825	58	.6815	98	.136	4	278		335.4	334.2
30	15.40	17	2	40 53	23	664	50	767	58	.6913	95	.132	3	250		348.6	347.2
31	15.46	18	1	37 9	224	615	49	708	59	.7008	90	.129	4	223	.0043	1.7	0.3
Aug. 1	15.53	20	2	33 25	24	566	49	648	60	.7098	87	.125	4	196		14.9	13.4
2	15.59	22	2	29 40	25	517	49	588	60	.7185	80	.121	7	168		28.1	26.4
3	15.66	23	1	25 54	26	469	48	527	61	.7270	83	.114	9	141		41.3	39.5
4	15.72	25	2	22 7	27	421	48	466	61	.7353	80	.105	11	113		54.4	52.5
5	15.79	27	2	18 20	227	373	48	404	62	.7433	77	.094	12	086	.0043	67.6	65.6
6	15.86	29	2	14 32	28	326	47	342	62	.7510	74	.082	13	059		80.8	78.7
7	15.92	31	2	10 43	29	280	46	280	62	.7584	72	.069	13	031		94.0	91.7
8	15.99	33	2	6 53	30	234	46	217	63	.7656	70	.056	11	2.4004		107.1	104.8
9	16.05	35	2	21 3 3	30	188	46	154	63	.7726	68	.045	8	2.3977		120.3	117.9
10	16.12	37	2	20 59 12	231	143	45	091	63	.7794	65	.037	5	949	.0042	133.5	130.9
11	16.18	39	2	55 20	33	098	45	1.29029	63	.7859	63	.032	3	922		146.7	144.0
12	16.25	41	2	51 27	33	054	44	1.28966	63	.7922	63	.029	1	894		159.8	157.1
13	16.32	43	2	47 34	33	1.67011	43	903	63	.7982	60	.028	0	867		173.0	170.1
14	16.38	46	3	43 40	34	1.66967	44	841	62	.8041	59	.028	1	840		186.2	183.2
15	16.45	48	2	39 45	235	925	42	779	62	.8098	57	.027	2	812	.0041	199.4	196.3
16	16.51	50	2	35 49	36	882	43	717	62	.8153	55	.025	4	785		212.5	209.3
17	16.58	52	2	31 53	36	840	42	656	61	.8206	53	.021	4	758		225.7	222.4
18	16.64	54	2	27 56	37	799	41	595	61	.8258	52	.014	7	730		238.9	235.5
19	16.71	56	2	23 58	38	758	41	535	60	.8308	50	7.004	10	703		252.1	248.5
20	16.77	23 15 58	2	20 0	238	718	40	476	59	.8355	47	6.992	12	675	.0041	265.3	261.6
21	16.84	23 16 0	2	16 0	40	678	40	417	59	.8401	46	.980	12	648		278.4	274.7
22	16.91	2	2	12 0	40	639	39	359	58	.8446	45	.969	11	621		291.6	287.7
23	16.97	4	2	7 59	41	600	39	301	58	.8489	43	.960	9	593		304.8	300.8
24	17.04	6	2	20 3 58	241	561	39	245	56	.8530	41	.952	8	566	.0040	318.0	313.8
25	17.10	8	1	19 59 56	42	523	38	190	55	.8569	39	.947	5	539		331.1	326.9
26	17.17	9	2	55 53	43	485	38	135	55	.8607	38	.945	2	511		344.3	340.0
27	17.23	11	1	51 49	44	448	37	082	53	.8643	36	.944	1	484		357.5	353.0
28	17.30	12	2	47 45	241	412	36	1.28031	51	.8678	35	.943	1	456	.0040	10.7	6.1
29	17.37	14	1	43 40	45	375	37	1.27980	51	.8712	34	.941	2	429		23.8	19.2
30	17.43	15	2	39 34	47	340	35	931	49	.8744	32	.937	4	402		37.0	32.2
31	17.50	23 16 17	1	19 35 28	46	1.66304	35	1.27883	48	n 0.8774	30	+6.931	6	+2.3374		50.2	45.3
					247		35		46		29		8				

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1847.	Sid. time Wash.	G.	H.	*log g.*	*log h.*	*log i.*	$f+\Delta f$	*t.*	*p.*	C	C−P
	h.	*h. m. s.*	*h. m. s.*				*s.*	*years.*		°	°
Sept. 1	17.56	23 16 18	19 51 21	1.66269	1 27837	n 0.8863	+6.923	+2.3347	.0040	63.4	58.4
2	17.63	19	27 13	235	793	831	.913	319		76.6	71.4
3	17.69	20	23 5	201	750	857	.902	292		89.7	84.5
4	17.76	21	18 56	167	709	882	.891	265		102.9	97.6
5	17.83	21	14 46	134	670	906	.881	237		116.1	110.6
6	17.89	22	10 36	101	632	928	.874	210	.0039	129.3	123.7
7	17.96	22	6 25	068	596	949	.870	173		142.4	136.8
8	18.02	23	19 2 14	036	562	968	.868	155		155.6	149.8
9	18.09	23	18 58 2	1.66001	530	986	.869	125		168.8	162.9
10	18.15	23	53 50	1 65972	500	9003	.870	100		182.0	176.0
11	18.22	22	49 37	941	472	9019	.871	073	.0039	195.1	189.0
12	18.29	22	45 21	910	447	9033	.872	046		208.3	202.1
13	18.35	22	41 10	879	423	9046	.870	2.3018		221.5	215.1
14	18.42	21	36 56	848	401	9058	.865	2.2991		234.7	228.2
15	18.48	20	32 42	818	382	9068	.857	964		247.8	241.3
16	18.55	19	28 27	788	365	9077	.848	936	.0038	261.0	254.3
17	18.61	18	24 12	758	350	9085	.838	909		274.2	267.4
18	18.68	17	19 57	728	338	9092	.828	881		287.4	280.5
19	18.75	15	15 41	699	328	9097	.819	854		300.6	293.5
20	18.81	14	11 25	669	320	9101	.812	827		313.7	306.6
21	18.88	12	7 9	640	315	9104	.807	799	.0038	326.9	319.7
22	18.91	10	18 2 53	611	312	9105	.805	772		340.1	332.7
23	19.01	7	17 58 57	582	312	9105	.805	745		353.3	345.8
24	19.08	5	54 21	553	314	9104	.805	717		6.4	358.9
25	19.14	23 16 2	50 4	524	318	9102	.804	690		19.6	11.9
26	19.21	23 15 59	45 47	495	325	9098	.802	662	.0037	32.8	25.0
27	19.27	56	41 31	467	331	9093	.798	635		46.0	38.1
28	19.34	53	37 14	438	346	9087	.791	608		59.1	51.1
29	19.40	50	32 57	409	360	9080	.782	580		72.3	64.2
30	19.47	46	28 41	380	376	9071	.771	553		85.5	77.3
Oct. 1	19.54	42	24 24	351	395	9061	.760	525	.0037	98.7	90.3
2	19.60	38	20 7	323	416	9050	.751	498		111.8	103.4
3	19.67	34	15 51	294	439	9037	.743	471		125.0	116.4
4	19.73	29	11 34	265	464	9023	.738	443		138.2	129.5
5	19.80	25	7 18	235	492	9007	.736	416		151.4	142.6
6	19.86	20	17 3 2	206	522	8990	.736	389	.0037	164.5	155.6
7	19.93	15	16 58 46	176	554	8972	.737	361		177.7	168.7
8	20.00	9	54 31	147	588	8953	.738	331		190.9	181.8
9	20.06	23 15 4	50 15	117	624	8932	.738	306		204.1	194.8
10	20.13	23 14 58	46 0	087	662	8910	.737	280		217.3	207.9
11	20.19	52	41 45	056	702	8886	.733	252	.0036	230.4	221.0
12	20.26	46	37 31	1.65025	744	8861	.726	224		243.6	234.0
13	20.32	40	33 17	1.64994	788	8834	.716	197		256.8	247.1
14	20.38	34	29 3	963	833	8806	.705	170		270.0	260.2
15	20.46	27	24 50	932	880	8776	.694	142		283.1	273.2
16	20.52	20	20 37	900	929	8745	.684	115	.0036	296.3	286.3
17	20.59	13	16 25	868	1.27979	8712	.676	087		309.5	299.4
18	20.65	23 14 6	12 13	835	1.28031	8678	.670	060		322.7	312.4
19	20.72	23 13 59	8 2	802	084	8642	.666	033		335.8	325.5
20	20.78	52	16 3 51	769	139	8604	.664	2.2005		349.0	338.6
21	20.85	44	15 59 40	735	195	8565	.663	2.1978	.0035	2.2	351.6
22	20.92	36	55 30	701	252	8521	.662	950		15.4	4.7
23	20.98	28	51 21	666	310	8481	.659	923		28.5	17.7
24	21.05	20	47 12	631	369	8437	.654	896		41.7	30.8
25	21.11	12	43 4	595	430	8391	.646	868		54.9	43.9
26	21.18	23 13 4	38 56	559	491	8343	.636	841	.0035	68.1	56.9
27	21.24	23 12 55	34 49	523	553	8293	.624	814		81.3	70.0
28	21.31	47	30 43	486	616	8241	.612	786		94.4	83.1
29	21.38	38	26 37	448	679	8187	.600	759		107.6	96.1
30	21.44	29	22 31	410	743	8131	.590	731		120.8	109.2
31	21.51	23 12 20	15 18 26	1.64371	1.28807	n 0.8072	+6.582	+2.1704	.0034	134.0	122.3

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1847.	Sid. time Wash.	G.		H.		log g.		log h.		$\frac{\log i.}{i}$		$f + \Delta_{\mathfrak{C}} f$		t.		p.	ℭ	ℭ−Γ′
	h.	h. m. s.		h. m. s.								s.		years.			°	°
Nov. 1	21.57	23 12 11	9	15 14 22	244	1.64331	40	1.28872	65	n0.8012	62	+ 6.576	3	+2.1677	.0034		147.1	135.4
2	21.64	23 12 2	9	10 18	43	291	40	937	65	.7950	65	.573	1	649			160.3	148.4
3	21.70	23 11 53	10	6 15	42	251	41	1.29002	66	.7885	68	.572	0	622			173.5	161.5
4	21.77	43	9	15 2 13	42	210	42	068	66	.7817	69	.572	2	595			186.7	174.5
5	21.84	34	9	14 58 11	41	168	42	134	65	.7748	72	.570	3	567			199.8	187.6
6	21.90	25	10	54 10	41	126	43	199	66	.7676	75	.567	5	540	.0034		213.0	200.7
7	21.97	15	10	50 9	40	083	44	265	66	.7601	78	.562	9	512			226.2	213.7
8	22.03	23 11 5	9	46 9	40	1.64039	44	331	65	.7523	81	.553	11	485			239.4	226.8
9	22.10	23 10 56	10	42 9	39	1.63995	45	396	65	.7442	83	.542	12	458			252.5	239.9
10	22.16	46	10	38 10	233	950	46	461	65	.7359	86	.530	13	430			265.7	252.9
11	22.23	36	10	34 12	37	904	46	526	64	.7273	89	.517	13	403	.0033		278.9	266.0
12	22.30	26	9	30 15	37	858	47	590	63	.7184	93	.504	11	376			292.1	279.0
13	22.36	17	10	26 18	37	811	48	653	63	.7091	97	.493	10	348			305.3	292.1
14	22.43	23 10 7	10	22 21	36	763	48	716	63	.6994	100	.483	7	321			318.4	305.2
15	22.49	23 9 57	10	18 25	235	715	49	778	62	.6894	103	.476	5	293			331.6	318.2
16	22.56	47	10	14 30	35	666	50	839	61	.6791	107	.471	4	266	.0033		344.8	331.3
17	22.62	37	10	10 35	34	616	50	900	61	.6684	112	.467	3	239			358.0	344.4
18	22.69	27	10	6 41	33	566	51	1.29960	60	.6572	116	.464	5	211			11.1	357.4
19	22.75	17	9	14 2 48	33	515	52	1.30018	58	.6456	120	.459	7	184			24.3	10.5
20	22.82	23 9 8	10	13 58 55	233	463	52	075	57	.6336	126	.452	10	157			37.5	23.6
21	22.88	23 8 58	10	55 2	32	411	53	132	57	.6210	131	.442	12	129	.0033		50.7	36.6
22	22.95	48	10	51 10	31	358	54	187	55	.6079	136	.430	14	102			63.8	49.7
23	23.02	38	9	47 19	31	304	54	241	54	.5943	142	.416	15	074			77.0	62.8
24	23.08	29	10	43 28	31	250	55	294	53	.5801	148	.401	14	047			90.2	75.8
25	23.15	19	9	39 37	230	195	56	345	51	.5653	155	.387	14	2.1020			103.4	88.9
26	23.21	10	10	35 47	29	149	56	395	50	.5498	162	.373	11	2.0992	.0032		116.5	102.0
27	23.28	23 8 0	9	31 58	30	083	57	444	49	.5336	170	.362	9	965			129.7	115.0
28	23.35	23 7 51	9	28 8	29	1.63026	58	491	47	.5166	178	.353	6	938			142.9	128.1
29	23.41	42	10	24 19	28	1.62968	58	536	45	.4988	188	.347	4	910			156.1	141.2
30	23.48	32	9	20 31	228	910	59	580	44	.4800	198	.343	3	883			169.3	154.2
Dec. 1	23.54	23	9	16 43	28	851	60	622	42	.4602	209	.340	3	855	.0032		182.4	167.3
2	23.61	14	8	12 55	27	791	60	663	41	.4393	220	.337	5	828			195.6	180.3
3	23.67	23 7 6	9	9 8	27	731	61	701	38	.4173	234	.332	7	791			208.8	193.4
4	23.74	23 6 57	9	5 21	27	670	61	738	37	.3939	249	.325	10	763			222.0	206.5
5	23.81	48	8	13 1 34	227	609	62	773	35	.3690	266	.315	12	736			235.1	219.5
6	23.87	40	9	12 57 47	26	547	62	806	33	.3424	284	.303	14	708	.0031		248.3	232.6
7	23.94	31	8	54 1	26	485	63	837	31	.3140	306	.289	16	691			261.5	245.7
8	0.00	23	8	50 15	26	422	63	866	29	.2834	330	.273	15	664			274.7	258.7
9	0.07	15	8	46 29	26	359	64	893	27	.2504	358	.258	11	636			287.8	271.8
10	0.13	7	7	42 44	25	295	65	918	25	n0.2146	393	.244	12	609			301.0	284.9
11	0.20	23 6 0	8	38 58	226	230	65	942	24	−1″.497	142	.232	9	582	.0031		314.2	297.9
12	0.27	23 5 52	7	35 13	25	165	65	963	21	.355	143	.223	8	554			327.4	311.0
13	0.33	45	7	31 28	25	100	66	982	19	.212	143	.215	6	527			340.5	324.1
14	0.40	38	7	27 44	24	1.62034	66	1.30999	17	1.069	143	.209	5	499			353.7	337.1
15	0.46	31	7	23 59	25	1.61967	67	1.31014	15	0.926	143	.204	6	472			6.9	350.2
16	0.53	24	7	20 14	225	901	66	027	13	.782	141	.198	8	445	.0030		20.1	3.3
17	0.59	17	6	16 30	24	834	67	038	11	.638	141	.190	10	417			33.2	16.3
18	0.66	11	6	12 46	24	766	68	047	9	.494	144	.180	13	390			46.4	29.4
19	0.73	23 5 5	6	9 1	25	698	68	053	6	.349	145	.167	15	363			59.6	42.5
20	0.79	23 4 59	6	5 17	24	630	68	057	4	.205	144	.152	16	335			72.8	55.5
21	0.86	53	6	12 1 33	221	562	68	059	2	−0.060	145	.136	16	308	.0030		86.0	68.6
22	0.92	47	5	11 57 49	21	493	69	059	0	+0.085	145	.120	15	280			99.1	81.6
23	0.98	42	5	54 4	25	423	70	057	2	.230	145	.105	13	253			112.3	94.7
24	1.05	37	5	50 20	24	354	69	052	5	.374	144	.092	11	226			125.5	107.8
25	1.12	32	5	46 36	24	285	69	045	7	.519	145	.081	11	198			138.7	120.8
26	1.19	27	5	42 51	225	215	70	036	9	.663	144	.073	8	171	.0030		151.8	133.9
27	1.25	22	4	39 6	25	145	70	025	11	.807	141	.068	5	144			165.0	147.0
28	1.32	18	4	35 22	24	075	70	013	13	0.951	144	.064	4	116			178.2	160.0
29	1.38	14	4	31 37	25	1.61004	71	1.30996	16	1.095	144	.061	3	089			191.4	173.1
30	1.45	10	4	27 52	25	1.60934	70	979	17	.238	143	.056	5	061			204.5	186.2
31	1.51	23 4 7	3	11 24 6	226	1.60864	70	1.30959	20	+1.381	143	+ 6.049	7	+2.0934	.0029		217.7	199.2
			1		225		71		22		142		9					

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1848.	Sid. time Wash.	G.			H.			*log g.*		*log h.*		*log i.*		$f+\Delta f$		*t.*		*p.*	C	C−Γ
	h.	*h.*	*m.*	*s.*	*h.*	*m.*	*s.*							*s.*		*years.*			°	°
Jan. 1	1.58	23	4	3	11	20	21	1.65793	71	1.30038	21	0.1828	787	+6.040	12	+2.0007	.0024		230.9	212.3
2	1.65	23	4	0		16	36	722	71	914	24	.2215	251	.028	11	1.9979			214.1	225.4
3	1.71	23	3	57		12	49	651	70	888	27	.2569	335	6.014	15	952			257.2	238.4
4	1.78			54		9	2	581	70	861	27	.2895	302	5.939	15	924			270.4	251.5
5	1.84			52		5	15	511	70	831	30	.3197	282	.984	15	897			283.6	264.6
6	1.91			49	11	1	28	441	70	800	31	.3479	263	.969	12	870	.0029		296.8	277.6
7	1.98			47	10	57	11	371	70	767	33	.3742	245	.957	13	842			309.9	290.7
8	2.04			46		53	53	301	70	731	36	.3988	231	.947	10	815			323.1	303.8
9	2.11			44		50	5	231	70	693	38	.4219	218	.940	7	787			336.3	316.8
10	2.17			43		46	17	161	70	651	39	.4437	205	.934	6	760			349.5	329.9
11	2.24			41		42	28	091	70	613	41	.4645	197	.929	5	733	.0028		2.7	342.9
12	2.30			40		38	30	1.60021	69	570	43	.4842	187	.924	7	705			15.8	356.0
13	2.37			40		34	49	1.59952	69	525	45	.5028	176	.917	8	678			29.0	9.1
14	2.43			39		30	59	883	69	479	46	.5206	168	.909	11	651			42.2	22.1
15	2.50			39		27	9	814	69	432	47	.5374	158	.898	11	623			55.4	35.2
16	2.55			39		23	18	746	68	383	49	.5535	161	.885	13	596	.0028		68.5	48.3
17	2.63			39		19	27	678	68	333	50	.5689	154	.870	15	568			81.7	61.3
18	2.70			39		15	35	610	67	281	52	.5836	147	.855	15	541			94.9	74.4
19	2.76			39		11	42	543	67	228	53	.5978	142	.841	14	514			108.1	87.5
20	2.83			40		7	49	476	67	173	55	.6114	136	.828	13	486			121.2	100.5
21	2.89			40		3	56	409	67	117	56	.6241	130	.818	10	459	.0028		134.4	113.6
22	2.96			41	10	0	2	343	66	059	58	.6369	125	.811	7	432			147.6	126.7
23	3.03			42	9	56	7	277	65	1.30001	59	.6489	120	.806	5	404			160.8	139.7
24	3.09			41		52	12	212	65	1.29942	60	.6605	116	.804	2	377			173.9	152.8
25	3.16			45		48	16	147	65	882	60	.6716	111	.802	2	349			187.1	165.9
26	3.22			46		44	20	083	64	821	61	.6823	107	.799	3	322	.0027		200.3	178.9
27	3.29			48		40	23	1.59019	63	759	62	.6927	104	.795	4	295			213.5	192.0
28	3.35			50		36	25	1.58956	63	696	63	.7026	99	.789	6	267			226.7	205.1
29	3.42			52		32	27	893	63	633	63	.7121	95	.780	9	240			239.8	218.1
30	3.49			54		28	28	831	62	569	64	.7214	93	.768	12	212			253.0	231.2
31	3.55			56		24	28	769	62	504	65	.7303	89	.756	12	185	.0027		266.2	244.2
Feb. 1	3.62	23	3	58		20	28	708	61	439	65	.7389	86	.742	14	158			279.4	257.3
2	3.68	23	4	0		16	27	647	61	373	66	.7472	83	.730	12	130			292.5	270.4
3	3.75			2		12	25	587	60	307	66	.7552	80	.719	11	103			305.7	283.4
4	3.81			5		8	23	528	59	241	66	.7630	78	.711	8	076			318.9	296.5
5	3.88			7		4	20	469	59	175	66	.7705	75	.705	6	048	.0026		332.1	309.6
6	3.95			10	9	0	16	411	58	109	66	.7777	72	.701	4	1.9021			345.2	322.6
7	4.01			12	8	56	12	351	57	1.29042	67	.7846	69	.698	3	1.8993			358.4	335.7
8	4.08			15		52	7	297	57	1.28976	66	.7912	66	.696	2	966			11.6	348.8
9	4.14			17		48	1	241	56	910	66	.7976	64	.693	3	939			24.8	1.8
10	4.21			20		43	55	186	55	845	65	.8038	62	.687	6	911	.0026		38.0	14.9
11	4.27			22		39	48	131	55	780	65	.8098	60	.680	7	884			51.1	28.0
12	4.34			25		35	40	077	54	715	65	.8156	58	.669	11	857			64.3	41.0
13	4.41			28		31	32	1.58024	53	651	64	.8212	56	.658	11	829			77.5	54.1
14	4.47			30		27	23	1.57971	53	587	64	.8266	54	.645	13	802			90.6	67.2
15	4.54			33		23	14	919	52	524	63	.8318	52	.653	12	774	.0026		103.8	80.2
16	4.60			35		19	4	868	51	461	63	.8367	49	.622	11	747			117.0	93.3
17	4.67			38		14	53	817	51	400	61	.8414	47	.614	8	720			130.2	106.3
18	4.73			40		10	42	767	50	340	60	.8460	46	.608	6	692			143.3	119.4
19	4.80			43		6	30	718	49	280	60	.8501	41	.606	2	665			156.5	132.5
20	4.87			45	8	2	18	669	49	222	58	.8546	42	.605	1	638	.0025		169.7	145.5
21	4.93			47	7	58	5	621	48	165	57	.8586	40	.605	0	610			182.9	158.6
22	5.00			49		53	52	574	47	109	56	.8625	39	.606	1	583			196.1	171.7
23	5.06			51		49	38	527	47	055	54	.8663	38	.605	1	555			209.2	184.7
24	5.13			53		45	23	481	46	1.28001	54	.8698	35	.602	3	528	.0025		222.4	197.8
25	5.19			55		41	8	436	45	1.27950	51	.8732	34	.596	6	501			235.6	210.9
26	5.26			57		36	53	391	45	900	50	.8764	32	.588	8	473			248.8	223.9
27	5.33	23	4	58		32	37	347	44	852	48	.8794	30	.578	10	446			261.9	237.0
28	5.39	23	5	0		28	21	303	44	805	47	.8823	29	.568	10	419	.0025		275.1	250.1
29	5.46	23	5	1	7	24	4	1.57260	43	1.27760	45	0.8851	28	+5.557	11	+1.8391			288.3	263.1

TABLE 1—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1848.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f+\Delta_{\mathfrak{C}} f$		*t.*	*p.*	$\mathfrak{C}$	$\mathfrak{C}-\Gamma$
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
Mar. 1	5.52	23 5 2		7 19 47	257	1.57217	42	1.27716	43	0.8877	25	+ 5.548	7	+1.8364	.0025	301.5	276.2
2	5.59	3		15 30	58	175	42	673	41	.8902	23	.541	4	336		314.6	289.3
3	5.65	4		11 12	58	133	41	632	38	.8925	22	.537	2	309		327.8	302.3
4	5.72	4		6 54	59	092	41	594	36	.8947	20	.535	1	282		341.0	315.4
5	5.79	5		7 2 35	259	051	40	558	34	.8967	19	.534	0	254		354.2	328.5
6	5.85	5		6 58 16	59	1.57011	40	524	31	.8986	17	.534	1	227	.0024	7.4	341.5
7	5.92	5		53 57	59	1.56971	39	493	28	.9003	16	.533	3	200		20.5	354.6
8	5.98	5		49 38	60	93[illegible]	39	465	25	.9019	15	.530	5	172		33.7	7.6
9	6.05	5		45 18	59	893	39	440	22	.9034	15	.525	5	145		46.9	20.7
10	6.11	4		40 59	59	854	38	418	20	.9047	13	.517	8	117		60.1	33.8
11	6.18	4		36 39	260	816	38	398	20	.9059	12	.508	9	090	.0024	73.2	46.8
12	6.25	3	1	32 19	60	778	38	380	18	.9070	11	.497	11	063		86.4	59.9
13	6.31	2	1	27 59	60	741	37	364	16	.9079	9	.486	11	035		99.6	73.0
14	6.38	23 5 0	2	23 40	59	704	37	350	14	.9087	8	.477	9	1.8008		112.8	86.0
15	6.44	23 4 59	1	19 20	60	667	37	338	12	.9093	6	.469	8	1.7980		125.9	99.1
16	6.51	57	2	15 0	260	630	37	328	10	.9098	5	.464	5	953	.0024	139.1	112.2
17	6.58	55	2	10 40	60	594	36	321	7	.9102	4	.462	2	926		152.3	125.2
18	6.64	52	3	6 21	59	558	36	316	5	.9104	2	.462		898		165.5	138.3
19	6.71	50	2	6 2 1	60	522	36	314	2	.9105	1	.463	1	871		178.6	151.4
20	6.77	47	3	5 57 41	60	486	36	314	0	.9105		.465	2	844		191.8	164.4
21	6.84	44	3	53 22	259	451	35	316	2	.9104	1	.466	1	816	.0023	205.0	177.5
22	6.90	41	3	49 3	59	416	35	321	5	.9101	3	.465	1	789		218.2	190.6
23	6.97	37	4	44 44	59	381	35	328	7	.9097	4	.461	4	761		231.4	203.6
24	7.04	34	3	40 25	59	346	35	338	10	.9092	5	.454	7	734		244.5	216.7
25	7.10	30	4	36 7	58	311	35	350	12	.9086	6	.445	9	707		257.7	229.8
26	7.17	26	4	31 49	258	275	36	365	15	.9078	8	.436	9	679	.0023	270.9	242.8
27	7.23	21	5	27 31	58	240	35	382	17	.9069	9	.426	10	652		284.1	255.9
28	7.30	16	5	23 14	57	205	35	401	19	.9058	11	.417	9	625		297.2	268.9
29	7.36	11	5	18 57	57	170	35	422	21	.9046	12	.410	7	597		310.4	282.0
30	7.43	6	5	14 40	57	135	35	445	23	.9033	13	.405	5	570		323.6	295.1
31	7.50	23 4 1	5	10 24	256	100	35	470	25	.9019	14	.402	3	542	.0022	336.8	308.1
Apr. 1	7.56	23 3 55	6	6 8	56	065	35	497	27	.9004	15	.401	1	515		349.9	321.2
2	7.63	49	6	5 1 53	55	1.56030	35	526	29	.8987	17	.401		488		3.1	334.3
3	7.69	43	6	4 57 38	55	1.55994	36	557	31	.8969	18	.401		460		16.3	347.3
4	7.76	36	7	53 24	54	958	36	591	34	.8949	20	.399	2	433		29.5	0.4
5	7.82	30	6	49 10	254	921	37	627	36	.8927	22	.394	5	406	.0022	42.6	13.5
6	7.89	23	7	44 57	53	885	36	666	39	.8904	23	.387	7	378		55.8	26.5
7	7.96	15	8	40 44	53	849	36	707	41	.8880	24	.378	9	351		69.0	39.6
8	8.02	8	7	36 32	52	812	37	750	43	.8855	25	.367	11	323		82.2	52.7
9	8.09	23 3 0	8	32 21	51	775	37	795	45	.8828	27	.356	11	296		95.3	65.7
10	8.15	23 2 53	7	28 11	250	737	38	842	47	.8800	28	.345	11	269	.0022	108.5	78.8
11	8.22	45	8	24 1	50	699	38	890	48	.8770	30	.336	9	241		121.7	91.9
12	8.28	36	9	19 52	49	661	38	939	49	.8739	31	.329	7	214		134.9	104.9
13	8.35	28	8	15 44	48	622	39	1.27989	50	.8707	32	.325	4	186		148.1	118.0
14	8.41	19	9	11 36	48	583	39	1.28040	51	.8673	34	.324	1	159		161.2	131.1
15	8.48	10	9	7 29	247	544	39	092	52	.8638	35	.324		132	.0021	174.4	144.1
16	8.55	23 2 1	9	4 3 23	46	505	39	145	53	.8601	37	.324		104		187.6	157.2
17	8.61	23 1 52	10	3 59 18	45	465	40	199	54	.8562	39	.324		077		200.8	170.2
18	8.68	42	9	55 13	45	424	41	255	56	.8523	40	.323	1	050		213.9	183.3
19	8.74	33	10	51 9	44	383	41	312	57	.8480	42	.319	4	1.7022		227.1	196.4
20	8.81	23	10	47 6	243	341	42	370	58	.8436	44	.312	7	1.6995	.0021	240.3	209.4
21	8.87	13	10	43 4	42	299	42	429	59	.8391	45	.302	10	967		253.5	222.5
22	8.94	23 1 3	11	39 2	42	256	43	489	60	.8344	47	.291	11	940		266.6	235.6
23	9.01	23 0 52	10	35 1	41	213	43	549	60	.8295	49	.280	11	913		279.8	248.6
24	9.07	42	11	31 1	240	169	44	610	61	.8244	51	.269	11	885	.0021	293.0	261.7
25	9.14	31	11	27 2	39	125	44	672	62	.8192	52	.259	10	858		306.2	274.8
26	9.20	20	11	23 4	38	080	45	734	62	.8138	54	.252	7	831		319.3	287.8
27	9.27	23 0 9	11	19 6	38	1.56034	46	797	63	.8083	55	.248	4	803		332.5	300.9
28	9.33	22 59 58	11	15 9	237	1.54988	46	860	63	.8025	58	.244	4	776		345.7	314.0
29	9.40	47	11	11 13	36	941	47	923	63	.7965	60	.242	2	748		358.9	327.0
30	9.47	22 50 36	11	3 7 18	35	1.54893	48	1.28986	63	0.7902	63	+ 5.240	2	+1.6721	.0020	12.1	340.1
			12		231		48		64		64		3				

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1848.	Sid. time Wash.	G.		H.			log g.		log h.		$\frac{\log i.}{i.}$		$f+\Delta_{\mathfrak{C}} f$		t.		p.	ℭ	ℭ−1′
	h.	h. m. s.		h. m. s.									s.		years.			°	°
May 1	9.53	22 59 24	11	3 3 24	231		1.54845	49	1.29050	63	0.7838	67	+5.237	6	+1.6694	.0020		25.2	353.2
2	9.60	13	12	2 59 30	33		796	50	113	63	.7771	69	.231	8	666			38.4	6.2
3	9.66	22 59 1	11	55 37	32		746	50	176	63	.7702	71	.223	10	639			51.6	19.3
4	9.73	22 58 50	12	51 45	31		696	50	239	63	.7631	73	.213	13	611			64.8	32.4
5	9.79	38	12	47 51	31		645	51	302	63	.7558	76	.200	13	583			77.9	45.4
6	9.86	26	12	44 3	230		593	52	365	63	.7482	78	.187	14	557	.0020		91.1	58.5
7	9.93	14	12	40 13	29		541	53	428	62	.7404	82	.173	12	529			104.3	71.5
8	9.99	22 58 2	12	36 24	28		488	54	490	62	.7322	85	.161	10	502			117.5	84.6
9	10.06	22 57 50	12	32 36	28		434	54	552	62	.7237	87	.151	7	475			130.6	97.7
10	10.12	38	12	28 48	28		380	54	613	61	.7150	89	.144	4	447			143.8	110.7
11	10.19	26	13	25 1	227		325	55	673	60	.7061	93	.140	3	420	.0019		157.0	123.8
12	10.25	13	12	21 15	26		269	56	733	60	.6968	96	.137	1	392			170.2	136.9
13	10.32	22 57 1	12	17 30	25		212	57	791	58	.6872	100	.136	2	365			183.3	149.9
14	10.39	22 56 49	12	13 45	25		154	58	849	58	.6772	103	.134	4	338			196.5	163.0
15	10.45	37	12	10 1	24		096	58	907	58	.6669	107	.130	6	310			209.7	176.1
16	10.52	24	13	6 18	223		1.54037	60	1.29961	56	.6562	111	.124	8	283	.0019		222.9	189.1
17	10.58	12	12	2 2 36	22		1.53977	61	1.30020	55	.6451	114	.116	10	256			236.1	202.2
18	10.65	22 56 0	12	1 58 54	22		916	61	075	54	.6337	120	.106	13	228			249.2	215.3
19	10.71	22 55 48	12	55 13	21		855	61	129	54	.6217	124	.093	14	201			262.4	228.3
20	10.78	36	12	51 33	20		793	62	182	53	.6093	129	.079	13	173			275.6	241.4
21	10.85	23	13	47 53	220		730	63	235	53	.5964	131	.066	13	146	.0019		288.8	254.5
22	10.91	22 55 11	12	44 14	19		666	64	286	51	.5830	134	.053	10	119			301.9	267.5
23	10.98	22 54 59	12	40 35	19		601	65	335	49	.5690	140	.043	10	091			315.1	280.6
24	11.04	47	12	36 57	18		536	65	383	48	.5545	145	.035	8	064			328.3	293.7
25	11.11	35	12	33 19	18		470	66	429	46	.5393	152	.030	5	037			341.5	306.7
26	11.17	21	11	29 42	217		403	67	474	45	.5234	159	.025	5	1.6009	.0019		354.6	319.8
27	11.24	12	12	26 5	17		336	68	517	43	.5070	164	.021	4	1.5982			7.8	332.8
28	11.31	22 54 0	12	22 29	16		268	69	559	42	.4897	173	.016	5	954			21.0	345.9
29	11.37	22 53 48	12	18 53	16		199	69	599	40	.4716	181	.009	7	927			34.2	359.0
30	11.44	37	11	15 18	15		130	69	638	39	.4526	190	+5.000	9	900			47.4	12.0
31	11.50	26	11	11 43	215		1.53060	70	676	38	.4325	201	+4.988	12	872	.0018		60.5	25.1
June 1	11.57	14	12	8 9	14		1.53989	71	712	36	.4114	211	.974	14	845			73.7	38.2
2	11.64	22 53 3	11	4 35	14		918	72	746	34	.3892	222	.959	15	818			86.9	51.2
3	11.70	22 52 52	11	1 1 1	14		846	72	778	32	.3655	237	.943	16	790			100.1	64.3
4	11.77	41	11	0 57 28	13		773	73	809	31	.3402	253	.928	15	763			113.2	77.4
5	11.83	30	11	53 55	213		700	73	837	28	.3134	268	.916	12	735	.0018		126.4	90.4
6	11.90	20	10	50 22	13		626	74	864	27	.2847	287	.906	10	708			139.6	103.5
7	11.96	22 52 9	11	46 50	12		552	74	890	26	.2538	309	.899	7	681			152.8	116.6
8	12.03	22 51 59	10	43 18	12		477	75	915	25	.2204	334	.894	5	653			165.9	129.6
9	12.10	49	10	39 46	12		401	76	937	22	0.1841	363	.891	3	626			179.1	142.7
10	12.16	39	10	36 14	212		325	76	958	21	+1.394	398	.888	3	599	.0018		192.3	155.8
11	12.23	29	10	32 43	11		248	77	976	18	.260	434	.883	5	571			205.5	168.8
12	12.29	19	10	29 12	11		171	77	1.30993	17	1.126	470	.877	6	544			218.6	181.9
13	12.36	10	9	25 41	11		093	78	1.31007	14	0.992	504	.868	9	516			231.8	195.0
14	12.42	22 51 1	9	22 11	10		1.52014	79	020	13	.857	535	.857	11	489			245.0	208.0
15	12.49	22 50 52	9	18 41	210		1 51935	79	032	12	.722	565	.844	13	462	.0017		258.2	221.1
16	12.56	43	9	15 11	10		856	80	041	9	.587	595	.829	15	434			271.3	234.2
17	12.62	34	9	11 41	10		776	80	049	8	.452	625	.814	15	407			284.5	247.2
18	12.69	26	8	8 11	10		696	80	054	5	.316	656	.800	14	379			297.7	260.3
19	12.75	18	8	4 41	10		615	81	057	3	.181	685	.788	12	352			310.9	273.3
20	12.82	10	8	0 1 11	210		534	81	058	1	+0.046	715	.778	10	325	.0017		324.1	286.4
21	12.88	22 50 2	8	23 57 41	10		452	82	057	1	−0.089	745	.771	7	297			337.2	299.5
22	12.95	22 49 51	8	54 11	10		370	82	055	2	.225	775	.765	6	270			350.4	312.5
23	13.02	47	7	50 41	10		288	82	051	4	.360	805	.761	4	243			3.6	325.6
24	13.08	40	7	47 11	10		205	83	045	6	.495	835	.755	6	215			16.8	338.7
25	13.15	33	7	43 41	210		122	83	037	8	.630	865	.748	7	188	.0017		29.9	351.7
26	13.21	26	7	40 11	10		1.51039	83	028	9	.765	895	.739	9	160			43.1	4.8
27	13.28	20	6	36 40	11		1.50956	83	016	12	0.900	925	.728	11	133			56.3	17.9
28	13.34	13	7	33 10	10		872	84	1.31003	13	1.035	955	.714	14	106			69.5	30.9
29	13.41	7	6	29 39	11		788	84	1.30988	15	.169	985	.698	16	078			82.6	44.0
30	13.47	22 49 2	5 6	23 26 8	211		1.50701	84	1 30971	17 19	−1.393	134 131	+4.682	16 15	+1.6051	.0017		95.8	57.1

ABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

848.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_{\mathfrak{C}} f$		*t.*	*p.*	$\mathfrak{C}$	$\mathfrak{C} - 1'$
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
uly 1	13.54	22 48 56	5	23 22 37	211	1.50620	85	1.30052	21	n0.1575	384	+4.667	13	+1.5024	.0016	109.0	70.1
2	13.61		51 5	19 6	11	535	85	931	22	.1959	351	.654	11	1.4996		122.2	83.2
3	13.67		46 5	15 35	12	450	85	909	25	.2310	324	.643	8	969		135.3	96.3
4	13.74		41 5	12 3	12	365	85	884	26	.2634	302	.635	6	941		148.5	109.3
5	13.80		36 4	8 31	212	280	85	858	29	.2936	280	.629	4	914		161.7	122.4
6	13.87		32 4	4 59	12	195	85	829	30	.3216	261	.625	3	887	.0016	174.9	135.5
7	13.94		28 4	23 1 27	12	110	85	799	31	.3477	247	.622	3	859		188.0	148.5
8	14.00		24 3	22 57 55	13	1.50025	85	768	33	.3724	233	.619	6	832		201.2	161.6
9	14.07		21 4	54 22	13	1.49940	85	735	35	.3957	219	.613	7	805		214.4	174.6
10	14.13		17 3	50 49	213	855	85	700	36	.4176	208	.606	10	777		227.6	187.7
11	14.20		14 3	47 16	14	770	85	664	37	.4384	196	.596	13	750	.0016	240.8	200.8
12	14.26		11 2	43 42	14	685	84	627	39	.4580	187	.583	14	722		253.9	213.8
13	14.33		9 3	40 8	15	601	84	588	41	.4767	179	.569	14	695		267.1	226.9
14	14.39		6 2	36 33	15	517	84	547	43	.4946	170	.555	12	667		280.3	240.0
15	14.46		4 2	32 58	216	433	84	504	44	.5116	162	.543	11	640		293.5	253.0
16	14.53		2 1	29 22	16	349	84	460	45	.5278	155	.532	9	613	.0016	306.6	266.1
17	14.60	23 48 1	2	25 46	17	265	83	415	46	.5433	149	.523	7	585		319.8	279.2
18	14.66	23 47 59	1	22 9	17	182	83	369	48	.5582	143	.516	7	558		333.0	292.2
19	14.72		58 1	18 32	18	099	83	321	49	.5725	137	.509	4	531		346.2	305.3
20	14.79		57 1	14 54	218	1.49016	83	272	50	.5862	132	.505	4	503		359.3	318.4
21	14.85		56 1	11 16	19	1.48933	82	222	51	.5994	127	.501	5	476	.0015	12.5	331.4
22	14.92		55	7 37	20	851	82	171	53	.6121	122	.496	7	449		25.7	344.5
23	14.98		55	3 57	20	769	82	118	53	.6243	118	.489	9	421		38.9	357.6
24	15.05		54	22 0 17	21	687	81	065	55	.6361	113	.480	12	394		52.1	10.6
25	15.12		54	21 56 36	221	606	81	1.30010	56	.6474	109	.468	14	366		65.2	23.7
26	15.18		54	52 55	22	525	80	1.29954	57	.6583	105	.454	14	339	.0015	78.4	36.8
27	15.25		55	49 13	22	445	80	897	57	.6688	102	.440	14	312		91.6	49.8
28	15.31		55	45 31	23	365	80	840	58	.6790	99	.426	13	284		104.8	62.9
29	15.38		56	41 48	24	285	79	782	59	.6889	96	.413	10	257		117.9	75.9
30	15.45		57	38 4	224	206	79	723	60	.6985	92	.403	7	230		131.1	89.0
31	15.51		57 1	34 20	25	127	78	663	60	.7077	89	.396	5	202	.0015	144.3	102.1
ug. 1	15.58		58 1	30 35	26	1.48049	77	603	61	.7166	86	.391	2	175		157.5	115.1
2	15.64	24 47 59	2	26 49	27	1.47972	77	542	61	.7252	86	.389	2	147		170.6	128.2
3	15.71	23 48 1	1	23 2	27	895	76	481	62	.7334	82	.387	1	120		183.8	141.3
4	15.77		2 1	19 15	228	819	76	419	62	.7413	79	.386	3	093		197.0	154.3
5	15.84		3 2	15 27	29	743	75	357	62	.7490	77	.383	5	065	.0014	210.2	167.4
6	15.91		5 1	11 38	29	668	74	295	62	.7566	76	.378	7	038		223.3	180.5
7	15.97		6 2	7 49	30	594	74	233	63	.7639	73	.371	10	1.4011		236.5	193.5
8	16.04		8 2	3 59	31	520	73	170	63	.7709	70	.361	10	1.3983		249.7	206.6
9	16.10		10 2	21 0 8	231	447	73	107	63	.7777	68	.351	13	956		262.9	219.7
10	16.17		12 2	20 56 17	32	374	72	1.29044	62	.7843	66	.338	12	928	.0014	276.1	232.7
11	16.23		14 2	52 25	32	302	71	1.28982	63	.7906	63	.326	10	901		289.2	245.8
12	16.30		16 2	48 32	33	231	71	919	63	.7968	62	.316	8	873		302.4	258.9
13	16.37		18 2	44 38	34	160	70	856	63	.8028	60	.308	5	846		315.6	271.9
14	16.43		20 2	40 44	34	090	69	794	62	.8085	57	.303	3	819		328.8	285.0
15	16.50		22 2	36 48	236	1.47021	68	732	61	.8141	56	.300	3	792	.0014	341.9	298.1
16	16.56		24 3	32 52	36	1.46953	68	671	61	.8194	53	.297	1	763		355.1	311.1
17	16.63		27 2	28 55	37	885	67	610	61	.8246	52	.296	2	737		8.3	324.2
18	16.69		29 2	24 57	38	818	66	549	60	.8296	50	.294	4	709		21.5	337.2
19	16.76		31 2	20 59	239	752	65	489	59	.8344	48	.290	7	682		34.6	350.3
20	16.82		33 2	17 0	40	687	64	430	58	.8391	47	.283	8	655	.0014	47.8	3.4
21	16.89		35 2	13 0	40	623	63	372	57	.8436	45	.275	11	627		61.0	16.4
22	16.96		37 2	8 59	41	560	63	315	57	.8479	43	.264	13	600		74.2	29.5
23	17.02		39 2	4 58	41	497	62	258	57	.8520	41	.251	12	573		87.3	42.6
24	17.09		41 2	20 0 56	242	435	61	202	56	.8560	40	.239	11	545	.0013	100.5	55.6
25	17.15		43 1	19 56 53	43	374	61	147	55	.8598	38	.228	8	518		113.7	68.7
26	17.22		44 2	52 49	44	313	60	094	53	.8635	37	.220	8	490		126.9	81.8
27	17.28		46 2	48 45	44	253	60	1.28042	52	.8670	35	.213	7	463		140.0	94.8
28	17.35		48 1	44 40	215	193	59	1.27992	50	.8704	34	.210	3	436	.0013	153.2	107.9
29	17.42		49 1	40 34	46	134	58	942	50	.8736	32	.210		408		166.4	121.0
30	17.48		50 1	36 28	46	076	57	894	48	.8767	31	.210		381		179.6	134.0
31	17.55	22 48 51	1	19 32 21	47	1.46019	57	1.27847	47	n0.8797	30	+4.211	1	+1.3353		192.7	147.1
			1		218				44		28						

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1848.	Sid. time Wash.	G.	H.	*log g.*	*log h.*	*log i.*	$f+\Delta f$	*t.*	*p.*	ℭ	ℭ−Γ
	h.	*h. m. s.*	*h. m. s.*				*s.*	*years.*		°	°
Sept 1	17.62	22 48 52	19 28 13	1.45962	1.27803	n 0.8825	+ 4.211	+1.3526	.0013	205.9	160.2
2	17.68	53	24 5	906	759	.8851	.209	299		219.1	173.2
3	17.74	54	19 56	851	717	.8876	.204	271		232.3	186.3
4	17.81	54	15 47	796	678	.8900	.197	244		245.5	199.4
5	17.87	55	11 37	742	640	.8923	.188	217		258.6	212.4
6	17.94	55	7 26	688	604	.8944	.178	179	.0013	271.8	225.5
7	18.01	55	19 3 15	635	569	.8964	.168	162		285.0	238.5
8	18.07	54	18 59 3	582	536	.8983	.159	134		298.2	251.6
9	18.14	54	54 51	530	505	.9000	.152	107		311.3	264.7
10	18.20	53 1	50 39	479	476	.9016	.148	080		324.5	277.7
11	18.27	52 1	46 26	428	450	.9030	.146	052	.0012	337.7	290.8
12	18.33	51 1	42 12	377	427	.9043	.145	1.3025		350.9	303.9
13	18.40	50 1	37 58	327	406	.9055	.146	1.2998		4.0	316.9
14	18.47	48 2	33 44	278	386	.9066	.145	970		17.2	330.0
15	18.53	46 2	29 30	229	369	.9075	.143	943		30.4	343.1
16	18.60	41 2	25 15	180	354	.9083	.139	915	.0012	43.6	356.1
17	18.66	41 3	21 0	132	341	.9090	.132	888		56.8	9.2
18	18.73	38 3	16 45	084	329	.9096	.123	861		69.9	22.3
19	18.80	35 3	12 29	1.45037	321	.9100	.113	833		83.1	35.3
20	18.86	32 3	8 13	1.44990	315	.9103	.102	806		96.3	48.4
21	18.93	28 4	18 3 57	943	311	.9105	.091	778	.0012	109.5	61.5
22	18.99	24 4	17 59 41	897	309	.9105	.083	751		122.6	74.5
23	19.06	20 4	55 24	851	311	.9104	.077	724		135.8	87.6
24	19.12	16 4	51 8	805	314	.9102	.073	696		149.0	100.7
25	19.19	11 5	46 51	759	320	.9099	.073	669		162.2	113.7
26	19.26	5 6	42 34	713	328	.9095	.074	642	.0012	175.3	126.8
27	19.32	22 48 0 5	38 17	668	340	.9089	.075	614		188.5	139.8
28	19.39	22 47 54 6	34 0	623	353	.9082	.076	587		201.7	152.9
29	19.45	48 6	29 43	578	369	.9073	.075	559		214.9	166.0
30	19.52	41 7	25 26	533	387	.9063	.072	532		228.0	179.0
Oct. 1	19.58	35 6	21 10	488	408	.9052	.066	505	.0011	241.2	192.1
2	19.65	28 7	16 53	442	430	.9040	.058	477		254.4	205.2
3	19.72	20 8	12 37	397	456	.9026	.048	450		267.6	218.2
4	19.78	12 8	8 20	352	483	.9011	.039	423		280.8	231.3
5	19.85	22 47 4 8	17 4 4	307	513	.8995	.030	395		293.9	244.4
6	19.91	22 46 55 9	16 59 48	261	544	.8977	.022	368	.0011	307.1	257.4
7	19.98	46 9	55 33	215	578	.8958	.017	340		320.3	270.5
8	20.04	37 9	51 18	169	613	.8938	.014	313		333.5	283.6
9	20.11	28 9	47 3	123	650	.8916	.013	286		346.6	296.6
10	20.17	18 10	42 48	077	690	.8892	.012	258		359.8	309.7
11	20.24	22 46 8 10	38 34	1.44030	731	.8867	.012	231	.0011	13.0	322.8
12	20.31	22 45 57 11	34 20	1.43982	775	.8841	.010	204		36.2	335.8
13	20.37	46 11	30 6	934	819	.8813	4.006	176		39.3	348.9
14	20.44	35 11	25 53	886	866	.8784	3.999	149		52.5	2.0
15	20.50	24 11	21 40	838	914	.8753	.990	121		65.7	15.0
16	20.57	12 12	17 27	789	1.27965	.8721	.979	094	.0011	78.9	28.1
17	20.63	22 45 0 12	13 15	739	1.28017	.8687	.967	067		92.1	41.1
18	20.70	22 44 47 13	9 3	689	070	.8652	.955	039		105.2	54.2
19	20.77	35 12	4 52	639	125	.8615	.945	1.2012		118.4	67.3
20	20.83	22 13	16 0 42	588	181	.8576	.937	1.1984	.0010	131.6	80.3
21	20.90	22 44 8 14	15 56 32	536	238	.8535	.931	957		144.7	93.4
22	20.96	22 43 55 13	52 22	484	296	.8493	.928	930		157.9	106.5
23	21.03	41 14	48 13	431	355	.8449	.927	902		171.1	119.5
24	21.09	27 14	44 4	378	415	.8403	.927	875	.0010	184.3	132.6
25	21.16	22 43 12 15	39 56	324	476	.8355	.927	848		197.4	145.7
26	21.23	22 42 58 14	35 49	269	537	.8306	.925	820		210.6	158.7
27	21.29	43 15	31 42	213	600	.8254	.921	793		223.8	171.8
28	21.36	28 15	27 36	156	664	.8201	.914	765	.0010	237.0	184.9
29	21.42	22 42 12 16	23 30	099	728	.8145	.905	738		250.2	197.9
30	21.49	22 41 56 16	19 25	1.43041	792	.8087	.894	711		263.3	211.0
31	21.55	22 41 40 16	15 15 21	1.42982	1.28857	n 0.8027	+ 3.882	+1.1673	.0010	276.5	224.1

ABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1848.	Sid. time Wash.	G.		H.		log g.		log h.		$\frac{\log i.}{i}$		$f + \Delta_{\mathfrak{C}} f$		t.	p.	$\mathfrak{C}$	$\mathfrak{C} - \Gamma'$
	h.	h. m. s.		h. m. s.								s.		years.		°	°
Nov. 1	21.62	22 41 24	16	15 11 17	243	1.42922	61	1.28922	65	n0.7965	64	+3.871	10	+1.1656	.0010	289.7	237.1
2	21.69	41 8	17	7 14	43	861	62	1.28987	66	.7901	67	.861	9	629		302.9	250.2
3	21.75	40 51	16	15 3 11	42	799	63	1.29053	65	.7834	69	.852	5	601		316.0	263.3
4	21.82	40 35	17	14 59 9	41	736	64	118	66	.7765	71	.847	4	574		329.2	276.3
5	21.88	40 18	17	55 8	241	672	65	184	66	.7694	75	.843	3	546		342.4	289.4
6	21.95	40 1	18	51 7	40	607	65	250	65	.7619	77	.840	2	519	.0010	355.6	302.4
7	22.01	39 43	17	47 7	39	542	66	315	65	.7542	79	.838	4	492		8.7	315.5
8	22.08	39 26	18	43 8	39	476	68	380	65	.7463	82	.834	5	464		21.9	328.6
9	22.15	39 8	17	39 9	38	408	68	445	65	.7381	82	.829	5	437		35.1	341.6
10	22.21	38 51	18	35 11	238	339	69	510	65	.7295	86	.821	8	409		48.3	354.7
11	22.28	38 33	18	31 13	37	269	70	574	64	.7207	88	.810	11	382	.0009	61.5	7.8
12	22.34	38 15	18	27 16	36	198	71	637	63	.7115	92	.797	13	355		74.6	20.8
13	22.41	37 57	18	23 20	36	126	72	700	63	.7019	96	.783	14	327		87.8	33.9
14	22.47	37 39	18	19 24	35	1.42053	73	762	62	.6920	99	.768	15	300		101.0	47.0
15	22.54	37 21	19	15 29	235	1.41979	74	824	62	.6818	102	.754	14	273		114.2	60.0
16	22.61	37 2	18	11 34	34	903	76	885	61	.6711	107	.743	11	245	.0009	127.3	73.1
17	22.67	36 44	19	7 40	34	826	77	1.29945	60	.6601	110	.734	9	218		140.5	86.2
18	22.74	36 25	18	14 3 46	33	749	77	1.30004	59	.6487	114	.728	6	190		153.7	99.2
19	22.80	36 7	19	13 59 53	33	670	79	062	58	.6367	120	.724	4	163		166.9	112.3
20	22.87	35 48	18	56 0	232	590	80	119	57	.6242	125	.721	3	136		180.0	125.4
21	22.93	35 30	19	52 8	32	509	81	174	55	.6112	130	.718	3	108	.0009	193.2	138.4
22	23.00	35 11	18	48 16	31	427	82	229	55	.5977	135	.715	3	081		206.4	151.5
23	23.06	34 53	19	44 25	31	344	83	282	53	.5836	141	.708	7	054		219.6	164.6
24	23.13	34 34	18	40 34	30	259	85	334	52	.5689	147	.700	8	1.1026		232.7	177.6
25	23.20	34 16	19	36 44	230	173	86	384	50	.5536	153	.689	11	1.0999		245.9	190.7
26	23.26	33 57	18	32 54	29	1.41087	86	432	48	.5376	160	.676	13	972	.0009	259.1	203.7
27	23.33	33 39	18	29 5	29	1.40999	88	479	47	.5208	168	.662	14	944		272.3	216.8
28	23.39	33 21	19	25 16	29	909	90	525	46	.5031	177	.648	14	917		285.5	229.9
29	23.46	33 2	18	21 27	28	818	91	570	45	.4846	185	.635	13	889		298.6	242.9
30	23.53	32 44	18	17 39	228	727	91	612	42	.4651	195	.623	12	862		311.8	256.0
Dec. 1	23.59	32 26	18	13 51	28	634	93	653	41	.4445	206	.615	8	834	.0009	325.0	269.1
2	23.66	32 8	18	10 3	27	540	94	692	39	.4227	218	.608	7	807		338.2	282.1
3	23.72	31 50	18	6 16	27	445	95	730	38	.3997	230	.603	5	780		351.3	295.2
4	23.79	31 33	17	12 2 29	27	349	96	765	35	.3753	244	.598	5	752		4.5	308.3
5	23.85	31 15	18	12 58 42	226	252	97	798	33	.3491	262	.593	5	725		17.7	321.3
6	23.92	30 58	17	54 56	26	153	99	830	32	.3212	279	.586	7	698	.0008	30.9	334.4
7	23.99	30 41	17	51 10	26	1.40054	99	860	30	.2911	301	.576	10	670		44.0	347.5
8	0.05	30 24	17	47 24	26	1.39954	100	887	27	.2589	322	.564	12	643		57.2	0.5
9	0.12	30 7	17	43 39	25	853	101	913	26	.2238	351	.550	14	616		70.4	13.6
10	0.18	29 50	17	39 54	225	751	102	936	23	n0.1853	385	.533	17	588		83.6	26.7
11	0.25	29 33	17	36 9	25	647	104	958	22	−1.390	423	.517	16	561	.0008	96.7	39.7
12	0.31	29 17	16	32 24	25	542	105	978	20	.248	142	.501	16	533		109.9	52.8
13	0.38	29 1	16	28 39	25	437	105	1.30985	17	1.105	143	.487	14	506		123.1	65.9
14	0.45	28 45	16	24 55	24	331	106	1.31011	16	0.962	143	.475	12	479		136.3	78.9
15	0.51	28 30	15	21 10	25	224	107	024	13	.818	144	.466	9	451		149.4	92.0
16	0.58	28 14	16	17 26	224	115	109	036	12	.674	144	.460	6	424	.0008	162.6	105.0
17	0.64	27 59	15	13 42	24	1.39006	109	045	9	.530	144	.455	5	397		175.8	118.1
18	0.71	27 44	15	9 57	25	1.38896	110	052	7	.385	145	.452	3	369		189.0	131.2
19	0.77	27 30	14	6 13	24	786	110	057	5	.241	144	.447	5	342		202.2	144.2
20	0.84	27 15	15	12 2 28	25	675	111	059	2	−0.096	145	.440	7	314		215.3	157.3
21	0.91	27 1	14	11 58 44	224	562	113	060	1	+0.049	145	.431	9	287	.0008	228.5	170.4
22	0.97	26 47	14	55 0	24	449	113	058	2	.194	145	.420	11	260		241.7	183.4
23	1.04	26 33	14	51 15	25	335	114	054	4	.339	145	.406	14	232		254.9	196.5
24	1.10	26 20	13	47 31	24	221	114	048	6	.483	144	.391	15	205		268.0	209.6
25	1.17	26 8	13	43 46	225	1.38106	115	039	9	.628	145	.376	15	178	.0008	281.2	222.6
26	1.23	25 56	12	40 1	25	1.37990	116	028	11	.772	144	.862	14	150		294.4	235.7
27	1.30	25 44	12	36 16	25	874	116	016	12	+0.916	144	.350	12	123		307.6	248.8
28	1.37	25 32	12	32 31	25	757	117	1.31001	15	+1.060	144	.340	10	095		320.7	261.8
29	1.43	25 20	12	28 46	225	640	117	1.30984	17	.203	143	.331	9	068	.0007	333.9	274.9
30	1.50	24 9	11	25 1	25	522	118	964	20	.346	143	.326	5	041		347.1	288.0
31	1.56	22 24 58	11	11 21 15	28	1.37403	119	1.30944	20	+1.489	143	+3.521	5	+1.0013		0.3	301.0
			19		225		119		23		142		6				

TABLE I.—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1849.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_c f$		*t.*	*p.*	$\mathfrak{C}$	$\mathfrak{C} - \Gamma$
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
Jan. 1	1.63	22 24 48	10	11 17 30	226	1.37284	119	1.30921	96	0.2124	363	+ 3.315	6	+0.9986	.0007	13.5	314.1
2	1.70		10	13 44	226	165	119	895	97	.2487	332	.3 9	9	958		26.7	327.1
3	1.76		9	9 58	227	1.37046	119	868	99	.2819	307	.300	11	931		39.8	340.2
4	1.83		9	6 11	227	1.36927	120	839	31	.3126	286	.289	14	904		53.0	353.3
5	1.89		9	11 2 24	227	807	120	808	33	.3412	267	.275	15	876		66.2	6.3
6	1.96	22 24 1	8	10 58 37	227	687	120	775	35	.3679	250	.260	17	849	.0007	79.3	19.4
7	2.02	22 23 53	8	54 50	228	567	120	740	37	.3929	235	.243	16	82		92.5	32.5
8	2.09	45	8	51 2	228	447	120	703	38	.4164	221	.227	16	79		105.7	45.5
9	2.16	37	7	47 14	229	327	120	665	41	.4385	213	.213	14	76		118.9	58.6
10	2.22	30	7	43 25	229	206	121	624	41	.4595	210	.201	12	7		132.0	71.7
11	2.29	23	6	39 36	230	1.36085	121	582	42	.4794	199	.192	9	712	.0007	145.2	84.7
12	2.35	17	6	35 46	230	1.35964	121	538	44	.4983	189	.186	6	68		158.4	97.8
13	2.42	11	6	31 56	230	843	121	492	46	.5163	180	.181	5	657		171.6	110.9
14	2.48	22 23 5	6	28 6	230	723	120	445	47	.5334	171	.178	3	630		184.7	123.9
15	2.55	22 22 59	6	24 15	231	603	120	396	49	.5496	162	.174	4	602		197.9	137.0
16	2.62	54	5	20 23	232	483	120	345	51	.5652	156	.170	4	575	.0007	211.1	150.1
17	2.68	49	5	16 31	232	363	120	293	52	.5802	150	.162	8	548		224.3	163.1
18	2.75	45	4	12 39	232	243	120	240	53	.5945	143	.153	9	520		237.4	176.2
19	2.81	41	4	8 46	233	124	119	186	54	.6082	137	.142	11	493		250.6	189.3
20	2.88	37	4	4 52	234	1.35005	119	130	56	.6214	132	.129	13	465		263.8	202.3
21	2.94	33	4	10 0 58	234	1.34887	118	073	57	.6340	126	.115	14	438	.0006	277.0	215.4
22	3.01	30	3	9 57 3	235	769	118	1.30015	58	.6461	121	.102	13	411		290.2	228.4
23	3.08	27	3	53 8	235	651	118	1.29956	59	.6577	116	.090	12	383		303.3	241.5
24	3.14	25	2	49 12	236	534	117	896	60	.6689	112	.081	9	356		316.5	254.6
25	3.21	22	3	45 16	236	418	116	835	61	.6798	109	.074	7	329		329.7	267.6
26	3.27	20	2	41 19	237	303	115	773	62	.6902	104	.070	4	301	.0006	342.9	280.7
27	3.34	18	1	37 21	238	188	115	710	63	.7002	100	.066	4	274		356.0	293.8
28	3.40	17	2	33 23	238	1.34074	114	647	63	.7099	97	.063	3	246		9.2	306.8
29	3.47	15	1	29 24	239	1.33960	114	583	64	.7192	93	.059	4	219		22.4	319.9
30	3.54	14	1	25 25	239	848	112	519	64	.7281	89	.054	5	192		35.6	333.0
31	3.60	13		21 25	240	736	112	454	65	.7368	87	.045	9	164	.0006	48.7	346.0
Feb. 1	3.67	13	1	17 24	241	625	111	388	66	.7452	84	.035	10	137		61.9	359.1
2	3.73	12		13 23	241	515	110	322	66	.7533	81	.022	13	110		75.1	12.2
3	3.80	12		9 21	242	406	109	256	66	.7611	78	3.008	14	082		88.3	25.2
4	3.86	12		5 18	243	298	108	190	66	.7686	75	2.994	14	055		101.5	38.3
5	3.93	12		9 1 15	244	191	107	124	66	.7758	72	.981	13	027	.0006	114.6	51.4
6	4.00	12		8 57 11	245	1.33084	105	1.29058	66	.7828	70	.971	10	0.9000		127.8	64.4
7	4.06	12		53 6	245	1.32979	104	1.28992	66	.7895	67	.963	8	0.8973		141.0	77.5
8	4.13	12		49 1	246	875	104	926	66	.7960	65	.958	5	945		154.2	90.6
9	4.19	13	1	44 55	246	772	103	860	66	.8023	63	.955	3	918		167.3	103.6
10	4.26	13		40 48	247	669	103	795	65	.8083	60	.954	1	891	.0006	180.5	116.7
11	4.32	14	1	36 41	247	567	102	730	65	.8141	58	.954		863		193.7	129.7
12	4.39	14		32 33	248	467	100	666	64	.8197	56	.952	2	836		206.9	142.8
13	4.46	15	1	28 24	249	368	99	602	64	.8251	54	.948	4	808		220.0	155.9
14	4.52	16	1	24 15	249	270	98	539	63	.8304	53	.942	6	781		233.2	168.9
15	4.59	17	1	20 5	250	173	97	476	63	.8355	51	.934	8	753	.0006	246.4	182.0
16	4.65	17		15 54	251	1.32077	96	415	61	.8403	48	.924	10	726		259.6	195.1
17	4.72	18	1	11 43	251	1.31982	95	355	60	.8449	46	.913	11	699		272.7	208.1
18	4.78	19	1	7 32	251	888	94	295	60	.8493	44	.902	11	671		285.9	221.2
19	4.85	20	1	8 3 20	252	795	93	236	59	.8536	43	.892	10	644		299.1	234.3
20	4.92	20	1	7 59 7	253	703	92	178	58	.8577	41	.885	7	617	.0005	312.3	247.3
21	4.98	21		54 54	253	612	91	122	56	.8616	39	.880	5	589		325.5	260.4
22	5.05	21		50 40	254	523	89	067	55	.8653	37	.877	3	562		338.6	273.5
23	5.11	21		46 26	254	435	88	1.28014	53	.8689	36	.876	1	535		351.8	286.5
24	5.18	21		42 11	255	348	87	1.27962	52	.8723	34	.876		507		5.0	299.6
25	5.24	21		37 56	255	262	86	912	50	.8756	33	.875	1	480	.0005	18.2	312.7
26	5.31	21		33 40	256	177	85	863	49	.8787	31	.872	3	452		31.3	325.7
27	5.38	21		29 24	256	093	84	816	47	.8816	29	.867	5	425		44.5	338.8
28	5.44	22 22 20	1	7 25 7	257	1.31011	82	1.27771	45	0.8844	28	+ 2.859	8	+0.8398		57.7	351.9
							81		43		27		9				

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1849.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_t f$		*t.*		*p.*	☾	☾−☿
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*			°	°
Mar. 1	5.51	22 22 20	1	7 20 50	258	1.30930	81	1.27728	42	0.8871	25	+2 850	11	+0.8370	.0005		70.9	4.9
2	5.57	19	2	16 32	58	849	79	686	40	896	23	.839	12	343			84.0	18.0
3	5.64	17	1	12 14	58	770	78	646	38	919	22	.827	11	316			97.2	31.0
4	5.70	16	2	7 56	59	692	78	608	36	941	20	.816	9	288			110.4	44.1
5	5.77	14	2	7 3 37	258	614	76	572	33	961	19	.807	7	261			123.6	57.2
6	5.84	12	2	6 59 19	59	538	76	539	31	980	18	.800	4	233	.0005		136.7	70.2
7	5.90	10	3	55 0	59	462	74	508	29	0.8998	16	.796	1	206			149.9	83.3
8	5.97	7	3	50 41	59	388	74	479	27	0.9014	15	.795	1	179			163.1	96.4
9	6.03	4	3	46 22	59	314	73	452	25	029	14	.796	1	151			176.3	109.4
10	6.10	22 22 1	3	42 3	260	241	72	427	23	043	12	.797		124			189.4	122.5
11	6.16	22 21 58	4	37 43	59	169	72	404	20	055	11	.797	1	097	.0005		202.6	135.6
12	6.23	54	5	33 24	60	097	70	384	17	066	10	.796	3	069			215.8	148.6
13	6.30	49	4	29 4	60	1.30027	69	367	15	076	8	.793	6	042			229.0	161.7
14	6.36	45	6	24 44	59	1.29958	69	352	13	084	7	.787	9	+0 8014			242.2	174.8
15	6.43	40	6	20 25	260	889	68	339	10	091	5	.778	9	+0.7987			255.3	187.8
16	6.49	34	6	16 5	60	821	68	329	8	096	4	.769	10	960	.0005		268.5	200.9
17	6.56	28	6	11 45	60	753	68	321	6	100	3	.759	8	932			281.7	214.0
18	6.63	22	7	7 25	60	686	67	315	3	103	2	.751	7	905			294.9	227.0
19	6.69	15	7	6 3 6	59	620	66	312	0	105		.744	5	878			308.0	240.1
20	6.76	8	8	5 58 46	60	554	66	312	2	105	1	.739	2	850			321.2	253.2
21	6.82	22 21 0	8	54 26	260	489	65	314	4	104	2	.737		823	.0004		334.4	266.2
22	6.89	22 20 52	8	50 7	59	424	65	318	7	102	3	.737		795			347.6	279.3
23	6.95	44	9	45 48	59	360	64	325	10	099	5	.737	1	768			0.7	292.3
24	7.02	35	10	41 29	59	296	64	335	12	094	6	.738	2	741			13.9	305.4
25	7.08	25	10	37 11	259	232	63	347	14	088	8	.736	3	713			27.1	318.5
26	7.15	15	10	32 52	58	169	63	361	16	080	9	.733	6	686	.0004		40.3	331.5
27	7.22	22 20 5	11	28 34	57	106	63	377	19	071	10	.727	9	659			53.4	344.6
28	7.28	22 19 54	11	24 17	57	1.29043	63	396	21	061	11	.718	9	631			66.6	357.7
29	7.35	43	12	20 0	57	1.28981	62	417	23	050	13	.708	12	604			79.8	10.7
30	7.41	31	12	15 43	257	919	62	440	25	037	14	.696	11	576			93.0	23.8
31	7.48	19	13	11 26	56	857	62	465	28	023	15	.685	10	549	.0004		106.2	36.9
Apr. 1	7.54	22 19 6	13	7 10	55	795	62	493	30	0.9008	17	.675	7	522			119.3	49.9
2	7.61	18 53	13	5 2 55	55	733	62	523	32	0.8991	18	.668	5	494			132.5	63.0
3	7.68	18 40	13	4 58 40	54	671	62	555	34	973	19	.663	2	467			145.7	76.1
4	7.74	18 26	14	54 26	254	609	62	589	36	954	21	.661		439			158.9	89.1
5	7.81	18 11	15	50 12	53	547	63	625	38	933	22	.661	1	412	.0004		172.0	102.2
6	7.87	17 56	15	45 59	52	484	62	663	40	911	24	.662		385			185.2	115.3
7	7.94	17 40	16	41 47	52	422	62	703	42	887	25	.662	1	357			198.4	128.3
8	8.00	17 24	16	37 35	52	360	62	745	43	862	27	.661	3	330			211.6	141.4
9	8.07	17 8	16	33 24	251	297	63	788	45	835	28	.658	6	303			224.7	154.5
10	8.14	16 51	17	29 13	50	233	64	833	46	807	29	.652	8	275	.0004		237.9	167.5
11	8.20	16 33	18	25 3	49	169	64	879	48	778	31	.644	10	248			251.1	180.6
12	8.27	16 15	18	20 54	49	105	64	927	49	747	32	.634	10	220			264.3	193.6
13	8.33	15 57	18	16 45	48	1.28041	65	1.27976	51	715	34	.624	10	193			277.4	206.7
14	8.40	15 38	19	12 37	247	1.27976	66	1.28027	52	681	35	.614	9	166			290.6	219.8
15	8.46	15 18	20	8 30	46	910	66	079	53	646	37	.605	6	138	.0004		303.8	232.8
16	8.53	14 58	20	4 24	46	844	66	132	54	609	38	.599	4	111			317.0	245.9
17	8.60	14 38	21	4 0 18	45	778	67	186	55	571	40	.595	2	084			330.2	259.0
18	8.66	14 17	21	3 56 13	44	711	68	241	56	531	41	.593	1	056			343.3	272.0
19	8.73	13 56	21	52 9	243	643	69	297	58	490	43	.592		029	.0004		356.5	285.1
20	8.79	13 35	22	48 6	43	574	70	355	59	447	45	.592	2	0.7001			9.7	298.2
21	8.86	13 13	23	44 3	42	504	70	414	59	402	47	.590	2	0.6974			22.9	311.2
22	8.92	12 50	23	40 1	41	434	71	473	60	355	48	.585	5	947			36.0	324.3
23	8.99	12 27	23	36 0	240	363	72	533	61	307	50	.579	6	919	.0004		49.2	337.4
24	9.06	12 4	23	32 0	39	291	73	594	62	257	52	.569	10	892			62.4	350.4
25	9.12	11 41	24	28 1	39	218	73	656	63	205	54	.558	11	864			75.6	3.5
26	9.19	11 17	25	24 2	38	144	74	719	63	151	56	.545	13	837			88.7	16.6
27	9.25	10 52	25	20 4	237	1.27070	75	782	63	095	58	.532	13	810	.0003		101.9	29.6
28	9.32	10 27	25	16 7	36	1.26995	77	845	63	0.8037	60	.519	13	782			115.1	42.7
29	9.38	10 2	25	12 11	35	918	78	908	63	0.7977	61	.509	10	755			128.3	55.8
30	9.45	22 9 37	25	3 8 16	235	1.26840	79	1.28971	63	0.7916	62	+2.502	7	+0.6728	.0003		141.4	68.8
			26										5					

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1849.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		$\frac{log\ i.}{i}$		$f + \Delta_2 f$	*t.*	*p.*	ℭ	ℭ−Γ
	h.	*h. m. s.*		*h. m. s.*								*s.*	*years.*		°	°
May 1	9.52	22 9 11	96	3 4 21	231	1.26761	80	1.29034	63	0.7853	65	+2.497	+0.6700	.0003	154.6	81.9
2	9.58	8 45	97	3 0 27	233	681	81	097	64	.7788	68	.495	673		167.8	94.9
3	9.65	8 18	97	2 56 34	232	600	82	161	63	.7720	68	.493	645		181.0	108.0
4	9.71	7 51	97	52 42	232	518	82	224	63	.7649	71	.492	618		194.2	121.1
5	9.78	7 24	97	48 51	231	435	83	287	63	.7576	73	.489	591		207.3	134.1
6	9.84	6 56	97	45 0	231	350	85	350	63	.7503	75	.485	563	.0003	220.5	147.2
7	9.91	6 29	97	41 19	230	264	86	413	63	.7422	78	.477	536		233.7	160.3
8	9.98	6 1	97	37 21	229	177	87	475	62	.7341	81	.468	508		246.9	173.3
9	10.04	5 32	97	33 33	228	1.26089	88	537	62	.7258	83	.456	481		260.0	186.4
10	10.11	5 4	97	29 45	228	1.25999	90	598	61	.7172	86	.444	454		273.2	199.5
11	10.17	4 35	98	25 58	227	908	91	658	60	.7083	89	.431	426	.0003	286.4	212.5
12	10.24	4 6	98	22 12	226	816	92	718	60	.6991	92	.420	399		299.6	225.6
13	10.30	3 37	98	18 27	225	722	94	777	59	.6896	95	.411	371		312.7	238.7
14	10.37	3 8	98	14 42	225	627	95	835	58	.6797	99	.404	344		325.9	251.7
15	10.44	2 39	99	10 58	224	521	96	893	58	.6695	102	.399	317		339.1	264.8
16	10.50	2 9	99	7 15	223	433	98	1.29950	57	.6589	106	.396	290	.0003	352.3	277.9
17	10.57	1 39	99	2 3 32	223	334	99	1.30006	56	.6480	109	.393	262		5.4	290.9
18	10.63	1 9	99	1 59 50	222	233	101	061	55	.6366	114	.389	235		18.6	304.0
19	10.70	22 0 39	99	56 9	221	131	102	115	51	.6248	118	.384	207		31.8	317.1
20	10.76	21 0 9	99	52 28	221	1.25028	103	168	53	.6124	124	.376	180		45.0	330.1
21	10.83	59 39	99	48 48	220	1.24923	105	221	53	.5996	128	.365	153	.0003	58.2	343.2
22	10.90	59 9	99	45 8	220	817	106	272	51	.5864	132	.352	125		71.3	356.2
23	10.96	58 38	99	41 29	219	710	107	322	50	.5726	138	.337	098		84.5	9.3
24	11.03	58 8	99	37 51	218	601	109	370	48	.5582	144	.321	070		97.7	22.4
25	11.09	57 37	99	34 13	218	490	111	417	47	.5432	150	.306	043		110.9	35.4
26	11.16	57 6	99	30 36	217	378	113	462	45	.5276	156	.293	0.6016	.0003	124.0	48.5
27	11.22	56 36	99	26 59	216	265	113	506	44	.5112	164	.283	0.5988		137.2	61.6
28	11.29	56 5	99	23 23	216	150	115	548	42	.4941	171	.275	961		150.4	74.6
29	11.36	55 34	99	19 47	216	1.24034	116	589	41	.4762	179	.270	934		163.6	87.7
30	11.42	55 3	99	16 11	216	1.23916	118	628	39	.4574	188	.266	906		176.7	100.8
31	11.49	54 32	99	12 36	215	796	120	666	38	.4376	198	.262	879	.0002	189.9	113.8
June 1	11.55	54 1	99	9 2	214	675	121	703	37	.4166	210	.258	851		203.1	126.9
2	11.62	53 30	99	5 28	214	552	123	737	34	.3946	220	.252	824		216.3	140.0
3	11.69	52 59	99	1 54	214	428	124	770	33	.3714	232	.244	797		229.4	153.0
4	11.75	52 29	99	0 58 21	213	303	125	801	31	.3465	249	.233	769		242.6	166.1
5	11.82	51 58	99	54 48	213	176	127	830	29	.3201	264	.220	742	.0002	255.8	179.2
6	11.88	51 27	99	51 15	213	1.23048	128	858	28	.2918	283	.206	715		269.0	192.2
7	11.95	50 57	99	47 43	212	1.22918	130	884	26	.2615	303	.192	687		282.1	205.3
8	12.01	50 26	99	44 11	212	787	131	909	25	0.2289	326	.178	660		295.3	218.4
9	12.08	49 56	99	40 39	212	654	133	932	23	+1.561	355	.167	632		308.5	231.4
10	12.14	49 26	99	37 8	211	520	134	953	21	.427	134	.158	605	.0002	321.7	244.5
11	12.21	48 55	99	33 37	211	384	136	972	19	.293	134	.150	578		334.9	257.5
12	12.28	48 25	99	30 6	211	247	137	1.30989	17	.159	134	.146	550		348.0	270.6
13	12.34	47 56	99	26 35	211	1.22109	138	1.31004	15	1.025	134	.141	523		1.2	283.7
14	12.41	47 26	99	23 4	210	1.21969	140	017	13	0.890	135	.136	496		14.4	296.7
15	12.47	46 56	99	19 34	210	828	141	029	12	.755	135	.130	468	.0002	27.6	309.8
16	12.54	46 27	99	16 4	210	685	143	039	10	.620	135	.122	441		40.7	322.9
17	12.60	45 58	99	12 34	211	541	144	047	8	.485	135	.110	413		53.9	335.9
18	12.67	45 29	99	9 3	210	396	145	053	6	.349	136	.096	386		67.1	349.0
19	12.74	45 0	99	5 33	210	249	147	056	3	.214	135	.081	359		80.3	2.1
20	12.80	44 32	98	0 2 3	210	1.21101	148	058	2	+0.079	135	.065	331	.0002	93.4	15.1
21	12.87	44 3	99	23 58 33	210	1.20952	149	058		−0.056	135	.048	304		106.6	28.2
22	12.93	43 35	98	55 3	210	801	151	056	2	.191	135	.034	277		119.8	41.3
23	13.00	43 8	97	51 33	210	649	152	052	4	.327	136	.022	249		133.0	54.3
24	13.06	42 40	98	48 3	210	497	152	047	5	.462	135	.012	222	.0002	146.2	67.4
25	13.13	42 13	97	44 33	210	343	154	040	7	.597	135	.005	194		159.3	80.5
26	13.20	41 46	97	41 3	211	187	156	031	9	.732	135	2.000	167		172.5	93.5
27	13.26	41 19	97	37 32	210	1.20031	156	020	11	0.867	135	1.996	140		185.7	106.6
28	13.33	40 53	96	34 2	210	1.19874	157	7.31007	13	1.002	135	.992	112	.0002	198.9	119.7
29	13.39	40 27	96	30 32	211	716	158	1.30992	15	136	134	.976	085		212.0	132.7
30	13.46	21 40 1	96	23 27 1	211	1.19557	159	1.30975	17	−1.270	134	+1.978	+0.6058		225.2	145.8
							161		19							

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1849.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_{\mathfrak{C}} f$		*t.*	*p.*	$\mathfrak{C}$	$\mathfrak{C} - \Gamma'$
	h.	*h. m. s.*		*h. m. s.*								*s.*				°	°
July 1	13.52	21 39 36	26	23 23 30	211	1.19396	161	1.30956	90	n 0.1474	393	+ 1.968	12	+0.5030	.0002	238.4	158.8
2	13.59	39 10	25	19 59	11	9235	162	936	22	.1867	360	.956	13	0.5003		251.6	171.9
3	13.66	38 45	24	16 28	11	9073	163	914	24	.2227	330	.943	15	0.4975		264.7	185.0
4	13.72	38 21	24	12 57	12	8910	164	890	26	.2557	308	.928	15	948		277.9	198.0
5	13.79	37 57	24	9 25	212	8746	165	864	28	.2865	284	.913	12	921		291.1	211.1
6	13.85	37 33	23	5 53	12	8581	166	836	29	.3149	267	.901	10	893	.0002	304.3	224.2
7	13.92	37 10	23	23 2 21	13	8415	166	807	31	.3416	250	.891	7	866		317.4	237.2
8	13.98	36 47	23	22 58 48	13	8249	167	776	32	.3666	234	.884	6	838		330.6	250.3
9	14.05	36 24	22	55 15	13	8082	168	744	34	.3900	223	.878	4	811		343.8	263.4
10	14.12	36 2	22	51 42	213	7914	168	710	36	.4123	210	.874	3	784		357.0	276.4
11	14.18	35 40	22	48 9	14	7746	169	674	37	.4333	199	.871	6	756	.0002	10.2	289.5
12	14.25	35 18	21	44 35	15	7577	169	637	39	.4532	190	.865	7	729		23.3	302.6
13	14.31	34 57	21	41 0	15	7408	170	598	41	.4722	180	.858	9	702		36.5	315.6
14	14.38	34 36	20	37 25	15	7238	170	557	42	.4902	172	.849	12	774		49.7	328.7
15	14.44	34 16	20	33 50	216	7068	170	515	43	.5074	165	.837	15	647		62.9	341.8
16	14.51	33 56	20	30 14	16	6898	171	472	45	.5239	157	.822	15	619	.0002	76.0	354.8
17	14.58	33 36	19	26 38	16	6727	171	427	46	.5396	151	.807	16	592		89.2	7.9
18	14.64	33 17	19	23 2	17	6556	171	381	48	.5547	144	.791	14	565		102.4	21.0
19	14.71	32 58	18	19 25	18	6385	171	333	49	.5691	138	.777	12	537		115.6	34.0
20	14.77	32 40	18	15 47	218	6214	171	284	50	.5829	134	.765	9	510		128.7	47.1
21	14.84	32 22	18	12 9	19	6043	171	234	51	.5963	128	.756	7	483	.0001	141.9	60.1
22	14.90	32 4	18	8 30	20	5872	172	183	52	.6091	123	.749	4	455		155.1	73.2
23	14.97	31 46	17	4 50	20	5700	172	131	54	.6214	118	.745	2	428		168.3	86.3
24	15.04	31 29	16	22 1 10	20	5528	172	077	55	.6332	114	.743	3	400		181.4	99.3
.25	15.10	31 13	16	21 57 30	221	5356	172	1 30022	56	.6446	111	.740	4	373		194.6	112.4
26	15.17	30 57	16	53 49	22	5184	171	1.29966	56	.6557	106	.736	6	346	.0001	207.8	125.5
27	15.23	30 41	16	50 7	22	5013	171	910	57	.6663	103	.730	8	318		221.0	138.5
28	15.30	30 25	15	46 25	23	4842	171	853	58	.6766	99	.722	10	291		234.1	151.6
29	15.36	30 10	15	42 42	23	4671	170	795	59	.6865	96	.712	12	263		247.3	164.7
30	15.43	29 55	15	38 59	23	4501	170	736	60	.6961	93	.700	13	236		260.5	177.7
31	15.49	29 40	14	35 15	25	4331	170	676	60	.7054	89	.687	12	209	.0001	273.7	190.8
Aug. 1	15.56	29 26	14	31 30	26	4161	169	616	61	.7143	87	.675	11	181		286.8	203.9
2	15.63	29 12	13	27 44	26	3992	169	555	61	.7230	84	.664	9	154		300.0	216.9
3	15.69	28 59	14	23 58	26	3823	168	494	61	.7314	80	.655	6	127		313.2	230.0
4	15.76	28 45	13	20 11	27	3655	167	433	62	.7394	78	.649	4	099		326.4	243.1
5	15.82	28 32	12	16 23	228	3488	167	371	62	.7472	76	.645	2	072	.0001	339.6	256.1
6	15.89	28 20	13	12 35	28	3321	166	309	62	.7548	73	.643	2	045		352.7	269.2
7	15.95	28 7	12	8 46	29	3155	165	247	62	.7621	71	.641	2	0.4017		5.9	282.3
8	16.02	27 55	12	4 56	30	2990	165	185	62	.7692	71	.639	2	0.3990		19.1	295.3
9	16.09	27 43	12	21 1 5	31	2826	164	122	63	.7761	69	.634	5	962		32.3	308.4
10	16.15	27 31	12	20 57 13	232	2663	163	1.29059	63	.7827	66	.628	6	935	.0001	45.4	321.4
11	16.22	27 19	11	53 21	32	2500	163	1.28997	62	.7891	64	.618	10	908		58.6	334.5
12	16.28	27 8	11	49 28	33	2339	161	934	63	.7953	62	.607	11	880		71.8	347.6
13	16.35	26 57	11	45 34	34	2178	161	871	63	.8013	60	.594	13	853		85.0	0.6
14	16.41	26 46	11	41 40	34	2019	159	809	62	.8071	58	.580	14	826		98.1	13.7
15	16.48	26 35	11	37 45	235	1861	158	747	62	.8127	56	.568	12	799	.0001	111.3	26.8
16	16.55	26 24	10	33 49	36	1704	157	686	61	.8181	54	.557	11	771		124.5	39.8
17	16.61	26 14	11	29 52	37	1548	156	625	61	.8233	52	.549	8	743		137.7	52.9
18	16.68	26 3	10	25 55	37	1393	155	564	61	.8283	50	.544	5	716		150.9	66.0
19	16.74	25 53	10	21 57	38	1240	153	504	60	.8332	49	.541	3	689		164.0	79.0
20	16.81	25 43	10	17 58	239	1088	152	445	59	.8379	47	.540	1	661	.0001	177.2	92.1
21	16.87	25 33	10	13 58	40	0937	151	387	58	.8424	45	.540		634		190.4	105.2
22	16.94	25 23	11	9 58	40	0788	149	330	57	.8468	44	.539	1	606		203.6	118.2
23	17.01	25 12	10	5 57	41	0640	148	273	57	.8510	42	.536	3	579		216.7	131.3
24	17.07	25 2	10	20 1 55	242	0494	146	217	56	.8550	40	.531	5	552	.0001	229.9	144.4
25	17.14	24 52	10	19 57 52	43	0349	145	162	55	.8589	39	.524	7	524		243.1	157.4
26	17.20	24 42	10	53 49	43	0206	143	109	53	.8626	37	.514	10	497		256.3	170.5
27	17.27	24 32	11	49 45	44	1.10064	142	057	52	.8662	36	.503	11	470		269.4	183.6
28	17.33	24 21	10	45 40	245	1.09923	141	1.28006	51	.8696	34	.493	10	442		282.6	196.6
29	17.40	24 11	11	41 35	45	9784	139	1.27956	50	.8729	33	.484	9	415		295.8	209.7
30	17.47	24 0	11	37 29	46	9647	137	908	48	.8760	31	.477	7	387		309.0	222.7
31	17.53	21 23 49	11	19 33 22	47	1.09511	136	1.27861	47	n 0.8790	30	+1.472	5	+0.3360	.0001	322.1	235.8
					247		134		45		28		3				

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1849.	Sid. time Wash.	G.		H.		log g.		log h.		log i.		$f+\Delta_c f$		t.	p.	C	C−Γ
	h.	h. m. s.		h. m. s.								s.		years.		°	°
Sept. 1	17.60	21 23 38	11	19 29 15	248	1.03377	133	1.27816	44	n 0.8818	27	+1.469		+0.8333	.0001	335.3	248.9
2	17.66	23 27	11	25 7	49	9244	131	772	42	.8845	26	.469		305		348.5	261.9
3	17.73	23 16	12	20 58	49	9113	129	730	40	.8871	24	.469		278		1.7	275.0
4	17.79	23 4	12	16 49	50	8984	128	690	38	.8895	23	.469		251		14.9	288.1
5	17.86	22 52	12	12 39	250	8856	126	652	37	.8918	21	.467	2	223		28.0	301.1
6	17.93	22 40	13	8 29	51	8730	124	615	35	.8939	20	.464	3	196		41.2	314.2
7	17.99	22 27	13	4 18	52	8606	122	580	34	.8959	19	.457	7	168		54.4	327.3
8	18.06	22 14	14	19 0 6	52	8484	121	546	31	.8978	17	.448	9	141		67.6	340.3
9	18.12	22 0	14	18 55 54	53	8363	119	515	29	.8995	16	.437	11	114		80.7	353.4
10	18.19	21 46	14	51 41	233	8244	117	486	27	.9011	15	.426	11	086		93.9	6.5
11	18.25	21 32	15	47 28	53	8127	116	459	24	.9026	14	.414	12 10	059		107.1	19.5
12	18.32	21 17	15	43 15	54	8011	114	435	22	.9040	12	.404	7	031		120.3	32.6
13	18.39	21 2	15	39 1	54	7897	113	413	20	.9052	11	.397	4	0.3004		133.4	45.7
14	18.45	20 47	16	34 47	55	7784	111	393	18	.9063	10	.393	2	0.2977		146.6	58.7
15	18.52	20 31	17	30 32	255	7673	109	375	16	.9073	8	.391		949		159.8	71.8
16	18.58	20 14	17	26 17	55	7564	108	359	14	.9081	7	.391		922		173.0	84.9
17	18.65	19 57	18	22 2	55	7456	106	345	12	.9088	6	.391	1	895		186.1	97.9
18	18.72	19 39	18	17 47	56	7350	105	333	9	.9094	5	.392	1	867		199.3	111.0
19	18.78	19 21	19	13 31	56	7245	103	324	7	.9099	3	.391	3	840		212.5	124.0
20	18.85	19 2	19	9 15	256	7142	102	317	4	.9102	2	.388	6	812		225.7	137.1
21	18.91	18 43	20	4 59	56	7040	100	313	2	.9104	1	.382	8	785		238.8	150.2
22	18.98	18 23	21	18 0 43	57	6940	99	311	1	.9105		.374	9	758		252.0	163.2
23	19.04	18 2	21	17 56 26	57	6841	98	312	3	.9105	2	.365	9	730		265.2	176.3
24	19.11	17 41	22	52 9	57	6743	97	315	5	.9103	3	.356	9	703		278.4	189.4
25	19.18	17 19	23	47 52	256	6646	95	320	8	.9100	4	.347	7	676		291.5	202.4
26	19.24	16 56	24	43 36	57	6551	94	328	11	.9096	5	.340	5	648		304.7	215.5
27	19.31	16 32	24	39 19	57	6457	93	339	13	.9091	7	.335	3	621		317.9	228.6
28	19.37	16 8	25	35 2	57	6364	92	352	15	.9084	8	.332	1	593		331.1	241.6
29	19.44	15 43	26	30 45	57	6272	91	367	18	.9076	10	.331	1	566		344.3	254.7
30	19.50	15 17	27	26 28	256	6181	90	385	20	.9066	10	.332	1	539		357.4	267.8
Oct. 1	19.57	14 50	28	22 12	57	6091	88	405	22	.9056	13	.333	1	511	.0000	10.6	280.8
2	19.64	14 22	28	17 55	56	6003	87	427	25	.9043	13	.332	3	484		23.8	293.9
3	19.70	13 54	29	13 39	56	5916	86	452	27	.9030	15	.329	5	457		37.0	307.0
4	19.77	13 25	31	9 23	56	5830	86	479	29	.9015	16	.324	8	429		50.1	320.0
5	19.83	12 54	31	5 7	256	5744	85	508	31	.8999	17	.316	11	402		63.3	333.1
6	19.90	12 23	31	17 0 51	56	5659	84	539	33	.8982	19	.305	11	374		76.5	346.2
7	19.96	11 52	33	16 56 35	55	5575	83	572	34	.8963	20	.294	12	347		89.7	359.2
8	20.03	11 19	34	52 20	55	5492	83	606	37	.8943	21	.282	11	320		102.8	12.3
9	20.10	10 45	34	48 5	55	5409	82	643	39	.8922	23	.271	8	292		116.0	25.3
10	20.16	10 11	36	43 50	255	5327	82	682	41	.8899	25	.263	6	265		129.2	38.4
11	20.23	9 35	36	39 35	54	5245	81	723	43	.8874	26	.257	4	237		142.4	51.5
12	20.29	8 59	37	35 21	54	5164	81	766	44	.8848	27	.253	1	210		155.6	64.5
13	20.36	8 22	39	31 7	54	5083	81	810	46	.8821	29	.252		183		168.7	77.6
14	20.42	7 43	39	26 53	53	5002	81	856	48	.8792	31	.252		155		181.9	90.7
15	20.49	7 4	40	22 40	352	4921	81	904	50	.8761	32	.252	1	128		195.1	103.7
16	20.56	6 24	41	18 28	52	4840	80	1.27954	51	.8729	31	.251	4	101		208.3	116.8
17	20.62	5 43	42	14 16	52	4760	80	1.28005	53	.8695	35	.247	5	073		221.4	129.9
18	20.69	5 1	43	10 4	51	4680	80	058	54	.8660	37	.242	8	046		234.6	142.9
19	20.75	4 18	43	5 53	51	4600	80	112	55	.8623	38	.234	11	0.2018		247.8	156.0
20	20.82	3 35	45	16 1 42	250	4520	81	167	57	.8585	40	.223	10	0.1991		261.0	169.1
21	20.88	2 50	46	15 57 32	50	4439	81	224	58	.8545	42	.213	11	964		274.1	182.1
22	20.95	2 4	47	53 22	49	4358	81	282	59	.8503	44	.202	9	936		287.3	195.2
23	21.02	1 17	47	49 13	49	4277	81	341	59	.8459	45	.193	8	909		300.5	208.3
24	21.08	21 0 30	49	45 4	248	4196	81	400	60	.8414	48	.185	4	882		313.7	221.3
25	21.15	20 59 41	49	40 56	47	4115	82	460	61	.8366	49	.181	3	854		326.8	234.4
26	21.21	58 52	51	36 49	47	4033	82	521	63	.8317	51	.178	1	827		340.0	247.5
27	21.28	58 1	51	32 42	47	3951	83	584	64	.8266	53	.177	1	799		353.2	260.5
28	21.34	57 10	52	28 35	246	3868	83	648	64	.8213	55	.176	2	772		6.4	273.6
29	21.41	56 18	54	24 29	45	3785	84	712	64	.8158	57	.174	4	745		19.6	286.6
30	21.47	55 24	54	20 24	45	3701	85	776	65	.8101	59	.170	6	717		32.7	299.7
31	21.54	20 54 30	55	15 16 19	244	1.03616	86	1.28841	65	n 0.8042	61	+1.164	10	+0.1690	.0000	45.9	312.8

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1849.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_{\mathfrak{C}} f$		*t.*		*p.*	ℭ	ℭ − Υ
	h.	*h. m. s.*		*h m. s.*								*s.*		*years.*			°	°
Nov. 1	21.61	20 53 35	56	15 12 15	243	1.0353	9	1.28906	65	n 0.7981	64	+1.154	11	+0.1662	.0000		59.1	325.8
2	21.67	52 39	57	8 12	43	344	8	1.28971	66	.7917	66	.143	14	635			72.3	338.9
3	21.74	51 42	58	4 9	42	336	9	1.29037	65	.7851	66	.129	14	608			85.4	352.0
4	21.80	50 44	58	15 0 7	41	327	9	102	66	.7783	68	.115	13	580			98.6	5.0
5	21.87	49 46	60	14 56 6	241	318	9	168	65	.7712	71	.102	11	553			111.8	18.1
6	21.93	48 46	60	52 5	40	309	9	233	66	.7639	73	.091	10	526	.0000		125.0	31.2
7	22.00	47 46	62	48 5	40	300	9	299	65	.7563	76	.081	6	498			138.1	44.2
8	22.07	46 44	62	44 5	40	291	10	364	65	.7484	79	.075	4	471			151.3	57.3
9	22.13	45 42	63	40 6	39	281	9	429	65	.7403	81	.071	4	443			164.5	70.4
10	22.20	44 39	64	36 8	38	272	10	494	64	.7318	85	.068	3	416			177.7	83.4
11	22.26	43 35	64	32 10	37	262	10	558	63	.7230	88	.066	2	389	.0000		190.8	96.5
12	22.33	42 31	66	28 13	37	252	9	621	63	.7138	92	.062	4	361			204.0	109.6
13	22.39	41 25	66	24 16	36	243	10	684	62	.7043	95	.057	5	334			217.2	122.6
14	22.46	40 19	67	20 20	36	233	10	746	62	.6945	98	.050	7	307			230.4	135.7
15	22.53	39 12	67	16 24	36	223	10	808	62	.6843	102	.040	10	279			243.5	148.8
16	22.59	38 5	69	12 29	34	212	11	869	61	.6737	106	.028	12	252	.0000		256.7	161.8
17	22.66	36 56	69	8 35	34	202	10	930	61	.6627	110	.015	13	224			269.9	174.9
18	22.72	35 47	70	4 41	33	191	11	1.29990	60	.6514	113	1.001	14	197			283.1	188.0
19	22.79	34 37	70	14 0 48	33	181	10	1.30048	58	.6395	119	0.989	12	170			296.3	201.0
20	22.85	33 27	72	13 56 55	232	170	11	105	57	.6272	122	.978	11	142			309.4	214.1
21	22.92	32 15	72	52 3	32	159	11	161	56	.6144	128	.970	8	115	.0000		322.6	227.1
22	22.99	31 3	73	49 11	31	147	12	216	55	.6010	134	.964	6	088			335.8	240.2
23	23.05	29 50	73	45 20	31	136	11	270	54	.5870	140	.960	4	060			349.0	253.3
24	23.12	28 37	74	41 29	31	124	12	322	52	.5725	145	.957	3	033			2.1	266.3
25	23.18	27 23	74	37 38	31	113	11	373	51	.5574	151	.953	4	0.1005			15.3	279.4
26	23.25	26 9	75	33 48	29	101	12	422	49	.5416	158	.948	5	0.0978	.0000		28.5	292.5
27	23.31	24 54	76	29 59	29	089	12	469	47	.5249	167	.939	9	951			41.7	305.5
28	23.38	23 38	76	26 10	29	076	13	515	46	.5074	175	.928	11	923			54.8	318.6
29	23.45	22 22	77	22 21	29	064	12	560	45	.4893	181	.915	13	896			68.0	331.7
30	23.51	21 5	78	18 33	28	051	13	603	43	.4700	193	.900	15	869			81.2	344.7
Dec. 1	23.58	19 47	78	14 45	27	038	13	644	41	.4495	205	.883	17	841	.0000		94.4	357.8
2	23.64	18 29	78	10 58	27	025	13	683	39	.4283	212	.867	16	814			107.5	10.9
3	23.71	17 11	79	7 11	27	1.0012	13	721	38	.4055	228	.853	14	786			120.7	23.9
4	23.77	15 52	80	13 3 24	27	0.9999	13	757	36	.3815	240	.840	13	759			133.9	37.0
5	23.84	14 32	80	12 59 37	226	985	14	790	33	.3558	257	.831	9	732			147.1	50.1
6	23.91	13 12	80	55 51	26	971	14	822	32	.3284	274	.824	7	704	.0000		160.3	63.1
7	23.97	11 52	81	52 5	26	957	14	852	30	.2988	296	.818	6	677			173.4	76.2
8	0.04	10 31	81	48 19	25	943	14	880	28	.2669	319	.814	4	650			186.6	89.3
9	0.10	9 10	82	44 34	26	928	15	906	26	n 0.2325	344	.809	5	622			199.8	102.3
10	0.17	7 48	82	40 48	225	914	14	930	24	−1.567	374	.802	7	595			213.0	115.4
11	0.23	6 26	82	37 3	25	899	15	952	22	.425	144	.793	9	567	.0000		226.1	128.4
12	0.30	5 4	83	33 18	25	884	15	972	20	.282	143	.782	11	540			239.3	141.5
13	0.37	3 41	83	29 33	25	869	15	1.30990	18	1.139	143	.769	13	513			252.5	154.6
14	0.43	2 18	83	25 48	25	853	16	1.31006	16	0.996	143	.754	15	485			265.7	167.6
15	0.50	20 0 55	83	22 4	24	838	15	020	14	.852	144	.739	15	458			278.8	180.7
16	0.56	19 59 31	84	18 19	225	822	16	032	12	.708	144	.725	14	430	.0000		292.0	193.8
17	0.63	58 7	84	14 35	24	806	16	041	9	.564	144	.712	13	403			305.2	206.8
18	0.69	56 43	84	10 51	24	789	17	049	8	.420	144	.701	11	376			318.4	219.9
19	0.76	55 18	85	7 6	25	773	16	054	5	.275	145	.693	8	348			331.5	233.0
20	0.83	53 54	84	12 3 22	24	756	17	057	3	−0.130	145	.688	5	321			344.7	246.0
21	0.89	52 29	85	11 59 37	225	740	16	058	1	+0.014	144	.683	5	294	.0000		357.9	259.1
22	0.96	51 4	85	55 53	24	723	17	057	1	.159	145	.678	5	266			11.1	272.2
23	1.02	49 39	85	52 9	24	705	18	054	3	.304	145	.672	6	239			24.3	285.2
24	1.09	48 14	85	48 24	25	688	17	048	6	.448	144	.664	8	211			37.4	298.3
25	1.15	46 48	86	44 39	225	671	17	040	8	.593	145	.653	11	184	.0000		50.6	311.4
26	1.22	45 22	86	40 55	24	653	18	030	10	.737	144	.640	13	157			63.8	324.4
27	1.29	43 57	85	37 10	25	635	18	018	12	0.881	144	.624	16	129			77.0	337.5
28	1.35	42 31	86	33 25	25	617	18	1.31004	14	1.025	144	.608	16	102			90.1	350.6
29	1.42	41 5	86	29 40	225	599	18	1.30987	17	.168	143	.591	17	075	.0000		103.3	3.6
30	1.48	39 39	86	25 55	25	581	18	968	19	.311	143	.575	16	047			116.5	16.7
31	1.55	19 38 13	85	22 10	225	0.9562	19	1.30948	20	+1.454	143	+0.561	14	+0 0020			129.7	29.7
									23		142		11					

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1850.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f+\Delta f$		*t.*	*p.*	ℭ	ℭ−Γ
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
Jan. 1	1.61	19 36 47	86	11 18 24	226	0.9543	19	1.30926	21	0.2031	339	+0.550	9	−0.0008		142.8	42.8
2	1.68	35 21	86	14 36	226	.9524	19	902	27	.2400	308	.541	6	035		156.0	55.9
3	1.75	33 55	86	10 52	227	.9505	19	875	28	.2739	314	.535	4	062		169.2	68.9
4	1.81	32 29	85	7 5	227	.9486	19	847	31	.3053	291	.531	5	090		182.4	82.0
5	1.88	31 4	86	11 3 18	227	.9467	19	816	32	.3344	272	.526	5	117		195.5	95.1
6	1.94	29 38	85	10 59 31	227	.9448	20	784	34	.3616	253	.521	6	144		208.7	108.1
7	2.01	28 13	86	55 44	228	.9428	20	750	37	.3869	239	.513	10	172		221.9	121.2
8	2.07	26 47	86	51 56	228	.9408	20	713	38	.4108	225	.503	13	199		235.1	134.3
9	2.14	25 21	86	48 8	228	.9388	20	675	40	.4333	213	.490	14	227		248.2	147.3
10	2.21	23 56	85	44 20	229	.9368	20	635	43	.4546	201	.476	14	254		261.4	160.4
11	2.27	22 31	85	40 31	229	.9348	20	592	44	.4747	190	.462	15	281		274.6	173.5
12	2.34	21 6	85	36 42	230	.9328	20	548	45	.4937	182	.447	13	309		287.8	186.5
13	2.40	19 41	85	32 52	230	.9308	20	503	47	.5119	173	.434	10	336		301.0	199.6
14	2.47	18 16	84	29 2	231	.9288	20	456	48	.5292	165	.424	8	364		314.1	212.6
15	2.53	16 52	84	25 11	231	.9268	20	408	50	.5457	158	.416	5	391		327.3	225.7
16	2.60	15 28	84	21 20	232	.9248	20	358	51	.5615	151	.411	4	418		340.5	238.8
17	2.67	14 4	84	17 28	232	.9228	21	307	53	.5766	144	.407	3	446		353.7	251.8
18	2.73	12 40	83	13 36	233	.9207	21	254	54	.5910	139	.404	4	473		6.8	264.9
19	2.80	11 17	83	9 43	234	.9186	21	200	56	.6049	133	.400	6	500		20.0	278.0
20	2.86	9 54	83	5 49	234	.9165	21	144	57	.6182	127	.394	8	528		33.2	291.0
21	2.93	8 31	83	10 1 55	234	.9144	21	087	58	.6309	122	.386	11	555		46.4	304.1
22	2.99	7 8	82	9 58 1	235	.9123	21	1.30029	59	.6431	118	.375	14	583		59.5	317.2
23	3.06	5 46	82	54 6	236	.9102	21	1.29970	59	.6549	113	.361	15	610		72.7	330.2
24	3.13	4 24	82	50 10	236	.9081	21	911	61	.6662	109	.346	16	637		85.9	343.3
25	3.19	3 2	82	46 14	236	.9060	20	850	62	.6771	105	.330	14	665		99.1	356.4
26	3.26	1 41	81	42 17	237	.9040	20	788	62	.6876	101	.316	12	692		112.2	9.4
27	3.32	19 0 20	81	38 20	237	.9020	20	726	63	.6977	98	.304	10	719		125.4	22.5
28	3.39	18 59 0	80	34 22	238	.9000	20	663	64	.7075	94	.294	6	747		138.6	35.6
29	3.45	57 40	80	30 23	239	.8980	20	599	64	.7169	91	.288	5	774		151.8	48.6
30	3.52	56 20	80	26 24	239	.8960	20	535	64	.7260	87	.283	3	802		165.0	61.7
31	3.59	55 1	79	22 24	240	.8940	20	471	65	.7347	84	.280	2	829		178.1	74.8
Feb. 1	3.65	53 42	79	18 23	241	.8920	20	406	66	.7431	82	.278	4	−0.0856		191.3	87.8
2	3.72	52 23	79	14 22	241	.8900	20	340	66	.7513	78	.274	5	884		204.5	100.9
3	3.78	51 4	79	10 20	242	.8880	20	274	66	.7591	76	.269	7	911		217.7	113.9
4	3.85	49 46	78	6 17	243	.8860	20	208	66	.7667	73	.262	10	939		230.8	127.0
5	3.91	48 29	77	9 2 14	244	.8840	19	142	67	.7740	71	.252	11	966		244.0	140.1
6	3.98	47 12	77	8 58 10	244	.8821	19	075	67	.7811	68	.241	11	993		257.2	153.1
7	4.05	45 55	77	54 6	245	.8802	19	1.29008	66	.7879	66	.230	12	1021		270.4	166.2
8	4.11	44 39	76	50 1	246	.8783	19	1.28942	66	.7945	63	.218	10	048		283.5	179.3
9	4.18	43 23	76	45 55	247	.8764	19	876	66	.8008	61	.208	8	075		296.7	192.3
10	4.24	42 8	75	41 48	247	.8745	19	811	65	.8069	59	.200	6	103		309.9	205.4
11	4.31	40 53	75	37 41	248	.8726	18	746	65	.8128	56	.194	4	130		323.1	218.5
12	4.37	39 38	74	33 33	248	.8708	18	681	64	.8184	54	.190	2	158		336.2	231.5
13	4.44	38 24	74	29 25	249	.8690	18	617	63	.8238	53	.188	1	185		349.4	244.6
14	4.51	37 10	73	25 16	250	.8672	18	554	63	.8291	51	.187	1	212		2.6	257.7
15	4.57	35 57	73	21 6	250	.8654	17	491	62	.8342	49	.186	4	340		15.8	270.7
16	4.64	34 44	73	16 56	251	.8637	17	429	61	.8391	47	.182	4	267		29.0	283.8
17	4.70	33 31	73	12 45	252	.8620	17	368	60	.8438	45	.178	7	294		42.1	296.9
18	4.77	32 19	72	8 33	252	.8603	17	308	59	.8483	42	.171	10	322		55.3	309.9
19	4.83	31 7	72	4 21	252	.8586	16	249	58	.8525	42	.161	12	349		68.5	323.0
20	4.90	29 56	71	8 0 9	253	.8570	16	191	57	.8567	40	.149	12	377		81.7	336.1
21	4.97	28 45	71	7 55 56	254	.8554	16	134	57	.8607	38	.137	12	404		94.8	349.1
22	5.03	27 34	71	51 42	255	.8538	15	079	55	.8645	36	.125	11	431		108.0	2.2
23	5.10	26 24	70	47 27	255	.8523	15	1.28026	53	.8681	35	.114	8	459		121.2	15.2
24	5.16	25 14	70	43 12	255	.8508	14	1.27974	52	.8716	33	.106	6	486		134.4	28.3
25	5.23	24 4	70	38 57	256	.8494	14	923	51	.8749	31	.100	3	513		147.5	41.4
26	5.29	22 54	69	34 41	256	.8480	13	874	49	.8780	30	.097	1	541		160.7	54.4
27	5.36	21 45	69	30 25	256	.8467	13	826	48	.8810	28	.096	1	568		173.9	67.5
28	5.43	18 20 36	68	7 26 9	256	0.8454	13	1.27781	45	0.8838	26	+0.095	1	−0.0596		187.1	80.6

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1850.	Sid. time Wash.	G.		H.		log g.		log h.		log i.		$f + \Delta_{\mathfrak{C}} f$		t.	p.	$\mathfrak{C}$	$\mathfrak{C} - \Gamma$
	h.	h. m. s.		h. m. s.								s.		years.		°	°
Mar. 1	5.49	18 19 28	68	7 21 53	257	0.8441	12	1.27737	42	0.8864	26	+0.094	2	−0.1623	.0000	200.2	93.6
2	5.56	18 20	68	17 36	58	429	12	695	40	.8890	24	.092	4	630		213.4	106.7
3	5.62	17 12	68	13 18	58	417	12	655	38	.8914	22	.088	7	678		226.6	119.8
4	5.69	16 4	67	9 0	59	405	11	617	36	.8936	20	.081	8	705		239.8	132.8
5	5.75	14 57	67	4 41	258	394	11	581	34	.8956	20	.073	10	732		253.0	145.9
6	5.82	13 50	67	7 0 23	59	383	10	547	33	.8976	18	.063	10	760	.0000	266.1	159.0
7	5.89	12 43	67	6 56 4	59	373	10	515	30	.8994	16	.053	8	787		279.3	172.0
8	5.95	11 36	67	51 45	59	363	9	485	27	.9010	16	.045	7	815		292.5	185.1
9	6.02	10 29	67	47 26	60	354	9	458	25	.9026	14	.038	5	842		305.7	198.2
10	6.08	9 22	67	43 6	259	345	8	433	23	.9040	12	.033	2	869		318.8	211.2
11	6.15	8 15	66	38 47	60	337	8	410	21	.9052	11	.031	1	897	.0000	332.0	224.3
12	6.21	7 9	66	34 27	60	329	7	389	18	.9063	10	.030	1	924		345.2	237.4
13	6.28	6 3	66	30 7	60	322	7	371	16	.9073	9	.031	1	951		358.4	250.4
14	6.35	4 57	66	25 47	59	315	6	355	13	.9082	7	.032	1	0.1979		11.5	263.5
15	6.41	3 51	66	21 28	260	309	6	342	11	.9089	6	.031	2	0.2006		24.7	276.5
16	6.48	2 45	66	17 8	60	303	5	331	8	.9095	4	.029	6	034	.0000	37.9	289.6
17	6.54	1 39	66	12 48	60	298	5	323	6	.9099	4	.023	8	061		51.1	302.7
18	6.61	18 0 33	66	8 28	59	293	4	317	4	.9103	2	.015	10	088		64.2	315.7
19	6.67	17 59 27	66	6 4 9	60	289	4	313	1	.9105		+0.005	12	116		77.4	328.8
20	6.74	58 21	67	5 59 49	260	285	3	312	1	.9105		−0.007	10	143		90.6	341.9
21	6.81	57 14	67	55 29	59	282	2	313	4	.9105	2	.017	11	170	.0000	103.8	354.9
22	6.87	56 7	67	51 10	59	280	2	317	6	.9103	3	.028	8	198		117.0	8.0
23	6.94	55 0	67	46 51	59	278	1	323	9	.9100	4	.036	5	225		130.1	21.1
24	7.00	53 53	67	42 32	59	277	1	332	11	.9096	6	.041	3	253		143.3	34.1
25	7.07	52 46	67	38 13	258	276	1	343	13	.9090	7	.044	1	280		156.5	47.2
26	7.13	51 39	68	33 55	58	275		356	16	.9083	9	·045		307	.0000	169.7	60.3
27	7.20	50 31	68	29 37	58	275	1	372	18	.9074	10	.045		335		182.8	73.3
28	7.27	49 23	68	25 19	57	276	1	390	20	.9064	11	.045		362		196.0	86.4
29	7.33	48 15	68	21 2	57	277	1	410	23	.9053	12	.045		390		209.2	99.5
30	7.40	47 7	68	16 45	256	278	1	433	25	.9041	14	.048	3	417		222.4	112.5
31	7.46	45 59	69	12 29	56	280	2	458	27	.9027	15	.054	6	444	.0000	235.5	125.6
Apr. 1	7.53	44 50	69	8 13	56	282	2	485	29	.9012	17	.062	8	472		248.7	138.7
2	7.59	43 41	69	5 3 57	55	285	3	514	31	.8995	18	.071	9	499		261.9	151.7
3	7.66	42 32	70	4 59 42	54	289	4	545	34	.8977	19	.081	10	526		275.1	164.8
4	7.73	41 22	70	55 28	254	293	4	579	36	.8958	20	.090	9	554		288.2	177.8
5	7.79	40 12	71	51 14	53	298	5	615	37	.8938	22	.098	8	581	.0000	301.4	190.9
6	7.86	39 1	71	47 1	52	303	5	652	39	.8916	23	.104	6	609		314.6	204.0
7	7.92	37 50	71	42 49	52	308	6	691	41	.8893	25	.107	3	636		327.8	217.0
8	7.99	36 39	71	38 37	52	314	6	732	43	.8868	27	.109	2	663		340.9	230.1
9	8.05	35 28	72	34 25	251	320	6	775	45	.8841	27	·109		691		354.1	243.2
10	8.12	34 16	73	30 14	50	326	7	820	46	.8814	29	.109	1	718	.0000	7.3	256.2
11	8.19	33 3	73	26 4	49	333	7	866	48	.8785	30	.110	3	745		20.5	269.3
12	8.25	31 50	73	21 55	49	340	8	914	49	.8755	32	·113	5	773		33.7	282.4
13	8.32	30 36	74	17 46	48	348	8	1 27963	51	.8723	33	.118	8	800		46.8	295.4
14	8.38	29 22	74	13 38	247	356	9	1.28014	52	.8690	35	.126	11	828		60.0	308.5
15	8.45	28 8	74	9 31	47	365	9	066	53	.8655	37	.137	12	855	.0001	73.2	321.6
16	8.51	26 53	75	5 24	46	374	10	119	54	.8618	38	.149	12	882		86.4	334.6
17	8.58	25 37	76	4 1 18	45	384	10	173	55	.8580	39	.161	12	910		99.5	347.7
18	8.65	24 21	76	3 57 13	44	394	11	228	57	.8541	41	.173	10	937		112.7	0.8
19	8.71	23 5	77	53 9	244	405	11	285	58	.8500	43	.183	7	964	.0001	125.9	13.8
20	8.78	21 48	77	49 5	43	416	11	343	58	.8457	43	.190	7	0.2992		139.1	26.9
21	8.84	20 31	78	45 2	42	427	11	401	59	.8413	41	.196	6	0 3019		152.2	40.0
22	8.91	19 13	78	41 0	41	438	12	460	60	.8367	46	.198	2	047		165.4	53.0
23	8.97	17 55	79	36 59	241	450	12	520	60	.8319	48	.200	2	074	.0001	178.6	66.1
24	9.04	16 36	79	32 58	40	462	12	580	61	.8269	50	.201	1	101		191.8	79.1
25	9.11	15 17	80	28 58	39	474	13	641	62	.8218	51	.204	3	129		205.0	92.2
26	9.17	13 57	80	24 59	38	487	13	703	62	.8165	53	.208	4	156		218.1	105.3
27	9.24	12 37	81	21 1	237	500	13	765	63	.8110	55	.214	6	184	.0001	231.3	118.3
28	9.30	11 16	81	17 4	37	513	13	828	63	.8053	57	.223	9	211		244.5	131.4
29	9.37	9 55	82	13 7	35	526	14	891	63	.7994	59	.234	11	238		257.7	144.5
30	9.43	17 8 33	83	3 9 12	233	0.8540	11	1.28955	64	0.7933	61	−0.246	12	−0.3266	.0001	270.8	157.5
									64		63		11				

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1850.	Sid. time Wash.	G.		H.		log g.		log h.		$\frac{\log i.}{i}$		$f + \Delta_1 f$		t.	p.	ℭ	ℭ − Γ
	h.	h. m. s.		h. m. s.								s.		years.		°	°
May 1	9.59	17 7 10	83	3 5 19	231	0.8554	14	1.29019	63	0.7870	65	— 0.257	11	−0.3293	.0001	284.0	170.6
2	9.57	5 47	83	3 1 25	33	568	14	082	61	.7805	64	.268	8	320		297.2	183.7
3	9.63	4 24	84	2 57 32	33	582	15	146	63	.7737	70	.276	8	348		310.4	196.7
4	9.70	3 0	84	53 39	32	597	15	209	63	.7667	72	.282	6	375		323.5	209.8
5	9.76	1 36	85	49 47	30	612	15	272	63	.7595	75	.286	4	403		336.7	222.9
6	9.83	17 0 11	85	45 57	30	627	15	335	63	.7520	78	.289	3	430	.0001	349.9	235.9
7	9.89	16 58 46	86	42 7	29	642	15	398	62	.7442	80	.291	2	457		3.1	249.0
8	9.96	57 20	86	38 18	29	657	15	460	62	.7362	83	.293	4	485		16.2	262.1
9	10.03	55 51	87	34 29	28	672	15	522	62	.7279	86	.297	7	512		29.4	275.1
10	10.09	54 27	87	30 41	27	688	16	583	61	.7193	86	.304	7	539		42.6	288.2
11	10.16	53 0	87	26 54	26	704	16	641	61	.7105	88	.313	9	567	.0001	55.8	301.3
12	10.22	51 33	88	23 8	25	720	16	704	60	.7013	92	.325	12	594		69.0	314.3
13	10.29	50 5	88	19 22	25	736	16	764	59	.6919	94	.338	13	622		82.1	327.4
14	10.35	48 37	88	15 37	24	752	16	823	59	.6821	98	.353	15	649		95.3	340.4
15	10.42	47 8	89	11 53	23	768	17	881	58	.6720	101	.367	14	676		108.5	353.5
16	10.49	45 39	89	8 10	23	785	16	938	57	.6615	105	.379	12	704	.0001	121.7	6.6
17	10.55	44 10	89	4 27	22	801	17	1.29994	56	.6506	109	.390	11	731		134.8	19.6
18	10.62	42 40	90	2 0 45	22	818	16	1.30049	55	.6393	113	.399	9	759		148.0	32.7
19	10.68	41 10	90	1 57 3	21	834	17	103	54	.6276	117	.406	7	786		161.2	45.8
20	10.75	39 40	91	53 22	20	851	16	156	53	.6154	122	.410	4	813		174.4	58.8
21	10.81	38 9	91	49 42	20	867	17	208	52	.6027	127	.414	4	841	.0001	187.5	71.9
22	10.88	36 38	91	46 2	19	884	16	259	51	.5895	132	.418	4	868		200.7	85.0
23	10.95	35 7	92	42 23	19	900	17	309	50	.5759	136	.424	6	895		213.9	98.0
24	11.01	33 35	92	38 44	18	917	17	358	49	.5617	142	.432	8	923		227.1	111.1
25	11.08	32 3	92	35 6	18	934	17	405	47	.5469	148	.442	10	950		240.2	124.2
26	11.14	30 31	92	31 28	17	951	17	451	46	.5313	156	.454	12	0.3978	.0001	253.4	137.2
27	11.21	28 59	93	27 51	16	968	17	495	44	.5152	161	.467	13	0.4005		266.6	150.3
28	11.27	27 26	93	24 15	16	0.8985	17	537	42	.4983	169	.471	14	032		279.8	163.4
29	11.34	25 53	93	20 39	15	0.9002	17	579	43	.4806	177	.494	13	060		292.9	176.4
30	11.41	24 20	93	17 4	15	019	17	619	40	.4620	186	.506	12	087		306.1	189.5
31	11.47	22 47	93	13 29	15	036	17	657	38	.4425	195	.516	10	114	.0001	319.3	202.6
June 1	11.54	21 14	93	9 54	14	053	17	694	37	.4220	205	.522	6	142		332.5	215.6
2	11.60	19 41	93	6 20	14	070	17	729	35	.4003	217	.527	5	169		345.6	228.7
3	11.67	18 7	94	1 2 46	13	086	16	762	33	.3773	230	.530	3	197		358.8	241.7
4	11.73	16 33	94	0 59 13	13	103	17	794	32	.3529	244	.534	4	224		12.0	254.8
5	11.80	14 59	94	55 40	13	119	16	824	30	.3268	261	.539	5	251	.0001	25.2	267.9
6	11.87	13 25	94	52 7	12	136	17	852	28	.2989	279	.547	8	279		38.4	280.9
7	11.93	11 51	94	48 35	12	152	16	878	26	.2693	296	.557	10	306		51.5	294.0
8	12.00	10 17	94	45 3	12	169	17	903	25	.2370	323	.570	13	333		64.7	307.1
9	12.06	8 43	95	41 31	11	136	16	926	23	0.2021	349	.585	15	361		77.9	320.1
10	12.13	7 8	95	38 0	12	202	16	947	21	+1.460	377	.602	17	388	.0001	91.1	333.2
11	12.19	5 53	95	34 28	11	218	16	966	19	.326	134	.618	16	416		104.2	346.3
12	12.26	4 58	95	30 57	11	234	16	984	18	.192	134	.633	15	443		117.4	359.3
13	12.33	2 24	94	27 26	10	250	16	1.30999	15	1.058	134	.646	13	470		130.6	12.4
14	12.39	16 0 50	94	23 56	11	266	16	1.31013	14	0.923	135	.656	10	496		143.8	25.5
15	12.46	15 59 16	94	20 25	10	282	16	025	12	.788	135	.664	8	525	.0001	156.9	38.5
16	12.52	57 42	94	16 55	10	298	16	035	10	.653	135	.670	6	553		170.1	51.6
17	12.59	56 8	94	13 25	10	314	16	044	9	.518	135	.675	5	580		183.3	64.7
18	12.65	54 34	94	9 55	11	330	16	050	6	.383	135	.680	5	607		196.5	77.7
19	12.72	53 0	94	6 24	10	346	16	055	5	.248	135	.686	6	635	.0001	209.7	90.8
20	12.79	51 26	94	0 2 54	10	361	15	058	3	+0.113	135	.695	9	662		222.8	103.9
21	12.85	49 52	94	23 59 21	10	376	15	059	1	−0.023	136	.706	11	689		236.0	116.9
22	12.92	48 18	94	55 54	10	391	15	057	2	.158	135	.719	13	717		249.2	130.0
23	12.98	46 45	93	52 24	10	406	15	054	3	.294	136	.733	14	744	.0001	262.4	143.0
24	13.05	45 12	93	48 54	10	421	15	049	5	.429	135	.748	15	772		275.5	156.1
25	13.11	43 39	93	45 24	10	436	15	042	7	.564	135	.762	14	799		288.7	169.2
26	13.18	42 6	93	41 54	10	451	15	033	9	.699	135	.775	13	826		301.9	182.2
27	13.25	40 33	93	38 24	10	466	15	022	11	.834	135	.785	10	854	.0002	315.1	195.3
28	13.31	39 1	92	34 54	11	481	14	1.31009	13	0.969	135	.793	8	881		328.2	208.4
29	13.38	37 29	92	31 23	10	495	14	1.30994	15	1.103	134	.799	6	905		341.4	221.4
30	13.44	16 35 57	92	23 27 53	211	0.9509	14	1.30978	16	−1.237	134	— 0.803	4	−0.4936	.0002	354.6	234.5

TABLE 1—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1850.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_t f$		*t.*	*p.*	ℭ	ℭ − Γ′
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
July 1	13.51	15 34 25	91	23 24 22	211	0.9523	14	1.30960	21	n 0.1370	405	−0.807	5	−0.4963	.0002	7.8	247.6
2	13.57	32 54	91	20 51	11	537	14	939	22	.1775	367	.812	6	0.4991		20.9	260.6
3	13.64	31 23	91	17 20	11	551	14	917	23	.2142	336	.818	10	0.5018		34.1	273.7
4	13.71	29 52	90	13 49	12	565	13	894	25	.2478	312	.828	12	045		47.3	286.8
5	13.77	28 22	90	10 17	212	578	14	869	27	.2790	290	.840	14	073		60.5	299.8
6	13.84	26 52	90	6 45	12	592	13	842	28	.3080	270	.854	16	100	.0002	73.7	312.9
7	13.90	25 22	89	23 3 13	13	605	13	814	30	.3350	251	.870	17	127		86.8	326.0
8	13.97	23 53	89	22 59 40	13	618	13	784	32	.3604	234	.887	15	155		100.0	339.0
9	14.03	22 24	88	56 7	13	631	13	752	34	.3844	240	.902	13	182		113.2	352.1
10	14.10	20 56	88	52 34	213	644	13	718	35	.4069	225	.915	12	210		126.4	5.2
11	14.16	19 28	88	49 1	14	657	13	683	37	.4282	213	.927	8	237	.0002	139.5	18.2
12	14.23	18 0	87	45 27	14	670	12	646	39	.4485	203	.935	7	264		152.7	31.3
13	14.30	16 33	87	41 53	15	682	12	607	40	.4677	192	.942	4	292		165.9	44.4
14	14.36	15 6	86	38 18	15	694	12	567	42	.4860	183	.946	4	319		179.1	57.4
15	14.43	13 40	86	34 43	216	706	12	525	43	.5033	173	.950	4	346		192.2	70.5
16	14.49	12 14	85	31 7	16	718	12	482	45	.5198	165	.954	4	374	.0002	205.4	83.5
17	14.55	10 49	85	27 31	17	730	12	437	46	.5357	159	.961	7	401		218.6	96.6
18	14.62	9 24	84	23 54	17	742	12	391	47	.5510	153	.970	9	429		231.8	109.7
19	14.69	8 0	84	20 17	17	754	11	344	48	.5656	146	.981	11	456		244.9	122.7
20	14.76	6 36	83	16 40	218	765	12	296	50	.5796	140	0.994	13	483		258.1	135.8
21	14.82	5 13	82	13 2	19	777	11	246	51	.5930	134	1.008	14	511	.0002	271.3	148.9
22	14.89	3 51	82	9 23	19	788	11	195	52	.6060	130	.021	13	538		284.5	161.9
23	14.95	2 29	81	5 44	20	799	11	143	53	.6184	124	.034	13	565		297.6	175.0
24	15.02	15 1 8	81	22 2 4	20	810	11	090	54	.6304	120	.044	10	593		310.8	188.1
25	15.08	14 59 47	80	21 58 24	221	821	11	I.30036	55	.6420	116	.051	7	620		324.0	201.1
26	15.15	58 27	80	54 43	22	832	11	1.29981	56	.6530	110	.057	6	648	.0002	337.2	214.2
27	15.22	57 7	79	51 1	22	843	11	925	57	.6638	108	.060	3	675		350.3	227.3
28	15.28	55 48	78	47 19	23	854	10	868	58	.6741	103	.062	2	702		3.5	240.3
29	15.35	54 30	77	43 36	23	864	10	810	58	.6841	100	.064	2	730		16.7	253.4
30	15.41	53 13	76	39 53	224	874	10	752	59	.6938	97	.068	4	757		29.9	266.5
31	15.48	51 57	75	36 9	25	884	10	693	60	.7031	93	.075	7	785	.0002	43.1	279.5
Aug. 1	15.54	50 42	75	32 24	25	894	10	633	61	.7121	90	.084	9	812		56.2	292.6
2	15.61	49 27	74	28 39	26	904	10	572	61	.7208	87	.096	12	839		69.4	305.7
3	15.68	48 13	74	24 53	27	914	10	511	62	.7293	85	.109	13	867		82.6	318.7
4	15.74	46 59	73	21 6	227	924	10	449	62	.7374	81	.124	15	894		95.8	331.8
5	15.81	45 46	72	17 19	28	934	10	387	62	.7453	79	.137	13	921	.0003	108.9	344.8
6	15.87	44 34	72	13 31	29	944	9	325	62	.7530	77	.149	12	949		122.1	357.9
7	15.94	43 22	71	9 42	30	953	9	263	62	.7604	74	.160	11	0.6976		135.3	11.0
8	16.00	42 11	70	5 52	30	962	9	201	62	.7675	71	.167	7	0.6004		148.5	24.0
9	16.07	41 1	69	21 2 2	231	971	10	138	63	.7744	69	.171	4	031		161.6	37.1
10	16.14	39 52	68	20 58 11	32	981	9	075	63	.7811	67	.173	2	058	.0003	174.8	50.2
11	16.20	38 44	67	54 19	33	990	9	1.29013	62	.7876	65	.175	2	086		188.0	63.2
12	16.27	37 37	66	50 26	34	0.9999	9	1.28950	63	.7938	62	.179	4	113		201.2	76.3
13	16.33	36 31	66	46 32	34	1.0008	9	887	63	.7998	60	.183	4	140		214.4	89.4
14	16.40	35 25	65	42 38	235	017	9	825	62	.8056	58	.189	6	168		227.5	102.4
15	16.46	34 20	64	38 43	36	026	9	763	62	.8112	56	.197	8	195	.0003	240.7	115.5
16	16.53	33 16	63	34 47	36	035	9	701	62	.8166	54	.208	11	223		253.9	128.6
17	16.60	32 13	62	30 51	37	044	9	639	62	.8219	53	.219	11	250		267.1	141.6
18	16.66	31 11	61	26 54	38	052	8	579	60	.8271	52	.231	12	277		280.2	154.7
19	16.73	30 10	60	22 56	239	060	8	519	60	.8320	49	.242	11	305		293.4	167.8
20	16.79	29 10	59	18 57	39	069	9	460	59	.8367	47	.250	8	332	.0003	306.6	180.8
21	16.86	28 11	58	14 57	40	077	8	401	59	.8412	45	.255	5	360		319.8	193.9
22	16.92	27 13	57	10 57	41	086	9	343	58	.8456	44	.259	4	387		332.9	207.0
23	16.99	26 16	57	6 56	242	094	8	286	57	.8499	43	.260	1	414		316.1	220.0
24	17.06	25 19	56	20 2 54	42	103	9	230	56	.8540	41	.260	0	442	.0003	359.3	233.1
25	17.12	24 23	55	19 58 52	43	111	8	175	55	.8579	39	.260	0	469		12.5	246.1
26	17.19	23 28	54	54 49	44	120	9	121	54	.8617	38	.261	1	496		25.6	259.2
27	17.25	22 34	52	50 45	245	128	8	069	52	.8653	36	.265	4	524		38.8	272.3
28	17.32	21 42	51	46 40	45	137	9	1.28017	52	.8687	34	.271	6	551	.0003	52.0	285.3
29	17.38	20 51	50	42 35	46	145	8	1.27967	50	.8720	33	.280	9	579		65.2	298.4
30	17.45	20 1	50	38 29	47	154	9	918	49	.8752	32	.291	11	606		78.4	311.5
31	17.52	14 19 11	49	19 34 22	247	1.0162	8	1.27870	48	n 0.8782	30	−1.303	12	−0.6633	.0003	91.5	324.5

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1850.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_{\mathbb{C}} f$		*t.*		*p.*	$\mathbb{C}$	$\mathbb{C} - \Gamma$
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*			°	°
Sept. 1	17.58	14 18 22	48	19 30 15	248	1.0171	8	1.27824	44	n0.8811	27	−1.316	11	−0.6661	.0003		104.7	337.6
2	17.65	17 34	47	26 7	48	179	8	780	42	.8838	26	.327	9	688			117.9	350.7
3	17.71	16 47	46	21 59	49	187	9	738	41	.8864	24	.336	6	715			131.1	3.7
4	17.78	16 1	45	17 50	50	196	8	697	39	.8888	23	.342	4	743			144.2	16.8
5	17.84	15 16	44	13 40	251	204	9	658	37	.8911	22	.346	1	770			157.4	29.9
6	17.91	14 32	43	9 29	51	213	8	621	35	.8933	21	.347		798	.0003		170.6	42.9
7	17.98	13 49	42	5 18	51	221	9	586	34	.8954	19	.347		825			183.8	56.0
8	18.04	13 7	41	19 1 7	52	230	8	552	31	.8973	18	.347	2	852			196.9	69.1
9	18.11	12 26	40	18 56 55	52	238	9	521	29	.8991	17	.349	5	880			210.1	82.1
10	18.17	11 46	39	52 43	253	247	9	492	27	.9008	15	.354	5	907			223.3	95.2
11	18.24	11 7	38	48 30	53	256	9	465	25	.9023	14	.359	8	934	.0004		236.5	108.2
12	18.30	10 29	38	44 17	54	265	9	440	23	.9037	13	.367	10	962			249.6	121.3
13	18.37	9 51	37	40 3	54	274	9	417	21	.9050	11	.377	10	0.6989			262.8	134.4
14	18.44	9 14	36	35 49	55	283	9	396	19	.9061	10	.387	9	0 7017			276.0	147.4
15	18.50	8 38	35	31 34	255	292	9	377	16	.9071	8	.396	8	044			289.2	160.5
16	18.57	8 3	33	27 19	55	301	9	361	14	.9079	8	.404	5	071	.0004		302.3	173.6
17	18.63	7 30	32	23 4	55	310	10	347	12	.9087	6	.409	3	099			315.5	186.6
18	18.70	6 58	32	18 49	56	320	10	335	9	.9093	5	.412	1	126			328.7	199.7
19	18.77	6 26	31	14 33	56	330	10	326	7	.9098	4	.413	1	153			341.9	212.8
20	18.83	5 55	30	10 17	256	340	10	319	5	.9102	2	.412	1	181			355.1	225.8
21	18.90	5 25	29	6 1	56	350	10	314	2	.9104	2	.411		208	.0004		8.2	238.9
22	18.96	4 56	29	18 1 45	56	360	10	312	1	.9106		.411	1	236			21.4	252.0
23	19.03	4 27	28	17 57 29	57	370	10	313	2	.9106	2	.412	5	263			34.6	265.3
24	19.09	3 59	27	53 12	57	380	10	315	5	.9104	3	.417	7	290			47.8	278.1
25	19.16	3 32	26	48 55	257	390	10	320	7	.9101	4	.424	9	318			60.9	291.2
26	19.23	3 6	25	44 38	56	400	11	327	10	.9097	5	.433	11	345	.0004		74.1	304.2
27	19.29	2 41	25	40 22	57	411	11	337	13	.9092	6	.444	11	372			87.3	317.3
28	19.36	2 16	24	36 5	57	422	11	350	14	.9086	8	.455	11	400			100.5	330.4
29	19.42	1 52	23	31 48	57	433	11	364	17	.9078	9	.466	9	427			113.6	343.4
30	19.49	1 29	23	27 31	256	444	11	381	20	.9069	10	.475	6	455			126.8	356.5
Oct. 1	19.55	1 6	22	23 15	57	455	11	401	21	.9059	12	.481	4	482	.0004		140.0	9.5
2	19.62	0 44	21	18 58	56	466	12	422	24	.9047	13	.485	1	509			153.2	22.6
3	19.69	0 23	21	14 42	57	478	12	446	26	.9034	15	.486		537			166.3	35.7
4	19.75	14 0 2	20	10 25	56	490	12	472	28	.9019	15	.486	1	564			179.5	48.7
5	19.82	13 59 42	19	6 9	256	502	12	500	30	.9004	17	.487	2	592			192.7	61.8
6	19.88	59 23	19	17 1 53	56	514	12	530	33	.8987	19	.489	4	619	.0004		205.9	74.9
7	19.95	59 4	18	16 57 37	55	526	13	563	35	.8968	20	.493	6	646			219.1	87.9
8	20.01	58 46	18	53 22	55	539	13	598	37	.8948	21	.499	7	674			232.2	101.0
9	20.08	58 28	17	49 7	55	552	13	635	39	.8927	22	.506	10	701			245.4	114.1
10	20.14	58 11	17	44 52	254	565	13	674	41	.8905	25	.516	10	728			258.6	127.1
11	20.21	57 54	17	40 38	54	578	13	715	42	.8880	25	.526	11	756	.0005		271.8	140.2
12	20.28	57 37	16	36 24	54	591	13	757	45	.8855	27	.537	8	783			284.9	153.3
13	20.34	57 21	16	32 10	54	604	14	802	46	.8828	29	.545	7	811			298.1	166.3
14	20.41	57 5	16	27 56	53	618	14	848	48	.8799	30	.552	5	838			311.3	179.4
15	20.47	56 50	15	23 43	253	632	14	896	50	.8769	32	.557	2	865			324.5	192.5
16	20.54	56 35	15	19 30	52	646	14	946	51	.8737	34	.559		893	.0005		337.6	205.5
17	20.60	56 20	15	15 18	52	660	14	1.27997	52	.8703	34	.559		920			350.8	218.6
18	20.67	56 6	14	11 6	51	674	14	1.28049	54	.8669	37	.559		947			4.0	231.7
19	20.74	55 52	14	6 55	51	689	15	103	55	.8632	38	.559		0.7975			17.2	244.7
20	20.80	55 38	14	16 2 44	251	704	15	158	56	.8594	40	.561	2	0.8002			30.3	257.8
21	20.87	55 24	14	15 58 33	50	719	15	214	57	.8554	41	.566	5	030	.0005		43.5	270.8
22	20.93	55 10	14	54 23	49	734	15	271	58	.8513	43	.573	7	057			56.7	283.9
23	21.00	54 57	13	50 14	49	749	15	329	59	.8470	45	.582	9	084			69.9	297.0
24	21.06	54 44	13	46 5	248	764	15	388	60	.8425	47	.595	13	112			83.1	310.0
25	21.13	54 31	13	41 57	48	780	16	448	61	.8378	49	.608	13	139	.0005		96.2	323.1
26	21.20	54 18	13	37 49	47	796	16	509	62	.8329	50	.621	13	166			109.4	336.2
27	21.26	54 5	13	33 42	46	812	16	571	62	.8279	53	.633	12	194			122.6	349.2
28	21.33	53 51	14	29 36	246	828	16	633	63	.8226	54	.642	9	221			135.8	2.3
29	21.39	53 38	13	25 30	45	844	16	696	64	.8172	57	.648	6	249	.0005		148.9	15.4
30	21.46	53 24	14	21 25	45	861	17	760	64	.8115	57	.652	4	276			162.1	28.4
31	21.52	13 53 11	13	15 17 20	245	1.0878	17	1.28824	64	n0.8057	58	−1.655	3	−0.8303	.0005		175.3	41.5
			13				17		65		61		2					

TABLE I.—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1851.	Std. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f+\Delta f$		*t.*		*p.*	ℭ	ℭ−Γ
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*			°	°
Jan. 1	1.69	13 29 12	31	11 19 20	226	1.20037	157	1.30931	21	0.1937	376	−2.252	15	−1.0001	.0007		272.2	131.5
2	1.66	28 38	31	15 34	226	0194	157	907	26	.2313	345	.267	14	028			285.4	144.6
3	1.73	28 4	31	11 48	227	0351	156	881	28	.2658	320	.281	11	056			298.6	157.7
4	1.80	27 29	33	8 1	226	0507	155	853	30	.2978	295	.292	9	083			311.8	170.7
5	1.86	26 54	33	4 15	227	0662	155	823	32	.3274	276	.301	9	110			324.9	183.8
6	1.93	26 19	33	11 0 28	228	0815	153	791	34	.3550	258	.308	7	138	.0007		338.1	196.8
7	1.99	25 41	35	10 56 40	227	0966	151	757	36	.3808	243	.312	4	165			351.3	209.9
8	2.06	25 9	36	52 53	228	1115	149	721	37	.4051	227	.316	4	193			4.5	223.0
9	2.12	24 33	35	49 5	229	1262	147	684	39	.4278	216	.320	4	220			17.6	236.0
10	2.19	23 58	35	45 16	229	1407	145	644	40	.4494	204	.326	6	247			30.8	249.1
11	2.26	23 23	35	41 27	229	1549	142	603	41	.4698	194	.334	8	275	.0008		44.0	262.2
12	2.32	22 47	35	37 38	229	1691	140	560	43	.4892	183	.346	12	302			57.2	275.2
13	2.39	22 12	36	33 48	230	1831	138	515	45	.5075	175	.359	13	330			70.3	288.3
14	2.45	21 36	35	29 58	231	1969	136	469	46	.5250	167	.374	15	367			83.5	301.4
15	2.52	21 1	36	26 7	231	2105	135	421	48	.5417	160	.390	16	384			96.7	314.4
16	2.58	20 25	35	22 16	232	2240	133	371	50	.5577	153	.406	16	411	.0008		109.9	327.5
17	2.65	19 50	35	18 24	232	2373	131	320	51	.5730	145	.420	14	439			123.0	340.6
18	2.72	19 15	36	14 32	233	2504	129	267	53	.5875	140	.431	11	466			136.2	353.6
19	2.78	18 39	35	10 39	233	2633	128	213	54	.6015	131	.440	9	494			149.4	6.7
20	2.85	18 4	35	6 46	234	2761	126	158	55	.6149	129	.447	7	521			162.6	19.8
21	2.91	17 29	35	10 2 52	234	2887	124	102	56	.6278	124	.451	4	549	.0008		175.8	32.8
22	2.98	16 54	35	9 58 58	235	3011	122	1.30045	57	.6402	119	.455	4	576			188.9	45.9
23	3.04	16 19	35	55 3	235	3133	121	1.29986	59	.6521	114	.460	5	603			202.1	59.0
24	3.11	15 44	34	51 8	236	3254	119	926	60	.6635	110	.467	7	631			215.3	72.0
25	3.18	15 10	35	47 12	237	3373	118	866	60	.6745	106	.475	8	658			228.5	85.1
26	3.24	14 35	34	43 15	237	3491	116	805	61	.7851	102	.486	11	685	.0008		241.6	98.1
27	3.31	14 1	34	39 18	238	3607	114	743	62	.6953	98	.499	13	713			254.8	111.2
28	3.37	13 27	34	35 20	238	3721	113	680	63	.7051	95	.512	13	740			268.0	124.3
29	3.44	12 53	34	31 22	239	3834	111	617	63	.7146	91	.526	14	768			281.2	137.3
30	3.50	12 19	34	27 23	240	3945	109	553	64	.7237	89	.538	12	795			294.3	150.4
31	3.57	11 46	33	23 23	240	4054	108	488	65	.7326	85	.548	10	822	.0009		307.5	163.5
Feb. 1	3.64	11 13	33	19 23	241	4162	106	423	66	.7411	83	.556	8	849			320.7	176.5
2	3.70	10 40	32	15 22	242	4268	106	357	66	.7494	79	.561	5	877			333.9	179.6
3	3.77	10 8	32	11 20	242	4372	104	291	66	.7573	76	.564	3	904			347.0	202.7
4	3.85	9 36	32	7 18	242	4475	103	225	66	.7649	74	.565	1	932			0.2	215.7
5	3.90	9 4	32	9 3 15	243	4576	101	159	66	.7723	71	.567	2	959	.0009		13.4	228.8
6	3.96	8 32	31	8 59 11	244	4676	100	093	66	.7794	69	.570	3	1.0987			26.6	241.9
7	4.03	8 1	31	55 7	244	4775	99	1.29026	67	.7863	66	.575	5	1.1014			39.7	254.9
8	4.10	7 30	31	51 2	245	4872	97	1.28960	66	.7929	64	.583	8	041			52.9	268.0
9	4.16	6 59	31	46 56	245	4968	96	894	66	.7993	61	.593	10	069			66.1	281.1
10	4.23	6 29	30	42 50	246	5063	95	828	66	.8054	59	.605	12	096	.0009		79.3	294.1
11	4.29	5 59	30	38 43	247	5156	93	763	65	.8113	56	.619	14	124			92.5	307.2
12	4.36	5 30	29	34 35	248	5248	92	698	65	.8171	55	.632	13	151			105.6	320.3
13	4.42	5 2	28	30 27	248	5338	90	634	64	.8226	53	.644	12	178			118.8	333.3
14	4.49	4 33	29	26 18	249	5427	89	570	64	.8279	51	.654	10	206			132.0	346.4
15	4.56	4 5	28	22 8	250	5515	88	507	63	.8330	49	.661	7	233	.0009		145.2	359.4
16	4.62	3 37	28	17 58	250	5602	87	445	62	.8379	47	.665	4	260			158.3	12.5
17	4.69	3 9	27	13 47	251	5688	86	384	61	.8426	46	.668	3	288			171.5	25.6
18	4.75	2 42	27	9 36	251	5773	85	324	60	.8472	43	.670	2	315			184.7	38.6
19	4.82	2 16	26	5 24	252	5857	84	264	60	.8515	42	.672	3	343			197.9	51.7
20	4.88	1 50	26	8 1 11	253	5540	83	206	58	.8557	40	.675	5	370	.0010		211.0	64.8
21	4.95	1 25	25	7 56 58	253	6022	82	149	57	.8597	38	.680	8	397			224.2	77.8
22	5.01	1 0	25	52 44	254	6103	81	094	55	.8635	37	.688	10	425			237.4	90.9
23	5.08	0 36	24	48 30	254	6183	80	1.28040	54	.8672	35	.698	11	452			250.6	104.0
24	5.15	13 0 12	24	44 16	254	6262	79	1.27987	53	.8707	33	.709	11	479			263.8	117.0
25	5.21	12 59 48	24	40 1	255	6340	78	936	51	.8741	31	.720	10	507	.0010		276.9	130.1
26	5.28	59 25	23	35 45	256	6417	77	886	50	.8773	32	.730	9	534			290.1	143.2
27	5.34	59 3	22	31 29	256	6494	77	838	48	.8803	30	.739	6	562			303.3	156.2
28	5.41	12 58 41	22	7 27 12	257	1.26570	76	1.27792	46	0.8832	29	−2.745	3	−1.1589	.0010		316.5	169.3
			21				75		41		26							

ABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

851.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f+\Delta_{\mathfrak{C}}f$		*t.*	*p.*	$\mathfrak{C}$	$\mathfrak{C}-\Gamma$
	h.	*h. m. s.*		*h. m. s.*								*s.*				°	°
Mar. 1	5.48	12 58 20	21	7 22 55	257	1.26645	75	1.27748	43	0.8858	25	−2.748	1	−1.1616	.0010	329.6	182.4
2	5.54	57 59	20	18 38	57	720	74	705	41	.8883	24	.749		644		342.8	195.4
3	5.61	57 39	20	14 21	58	794	74	664	38	.8907	23	.749	1	671		356.0	208.5
4	5.67	57 19	19	10 3	58	868	73	626	37	.8930	21	.748		698		9.2	221.6
5	5.74	57 0	19	5 45	259	1.26941	73	589	35	.8951	20	.748	2	726		22.3	234.6
6	5.80	56 41	18	7 1 26	58	1.27014	72	554	32	.8971	19	.750	5	753	.0010	35.5	247.7
7	5.87	56 23	17	6 57 8	59	086	72	522	30	.8990	17	.755	7	781		48.7	260.7
8	5.94	56 6	17	52 49	60	158	72	492	28	.9007	15	.762	10	808		61.9	273.8
9	6.00	55 49	17	48 29	59	230	72	464	26	.9022	15	.782	11	835		75.0	286.9
10	6.07	55 32	16	44 10	259	302	72	438	23	.9037	13	.783	12	863		88.2	299.9
11	6.13	55 16	16	39 51	60	374	71	415	21	.9050	11	.795	11	890	.0010	101.4	313.0
12	6.20	55 0	15	35 31	60	445	71	394	19	.9061	10	.806	9	917		114.6	326.1
13	6.26	54 45	14	31 11	60	516	71	375	16	.9071	9	.815	6	945		127.8	339.1
14	6.33	54 31	14	26 51	60	587	71	359	14	.9080	8	.821	4	1.1972		140.9	352.2
15	6.40	54 17	13	22 31	260	658	71	345	12	.9088	6	.825	2	1.2000		154.1	5.3
16	6.46	54 4	13	18 11	60	729	72	333	9	.9094	5	.827		027	.0011	167.3	18.3
17	6.53	53 51	12	13 51	60	801	72	324	7	.9099	3	.827	1	054		180.5	31.4
18	6.59	53 39	12	9 31	60	872	71	317	4	.9102	2	.828	1	082		193.6	44.5
19	6.66	53 27	11	5 11	60	1.27944	72	313	2	.9104	1	.829	3	109		206.8	57.5
20	6.72	53 16	11	0 0 52	260	1.28016	72	311	1	.9105		.832	6	136		220.0	70.6
21	6.79	53 5	10	5 56 32	59	088	72	312	4	.9105	1	.838	8	164	.0011	233.2	83.7
22	6.86	52 55	10	52 13	59	160	72	316	6	.9104	3	.846	10	191		246.3	96.7
23	6.92	52 45	9	47 54	59	232	73	322	8	.9101	5	.856	11	219		259.5	109.8
24	6.99	52 36	9	43 35	59	305	73	330	10	.9096	5	.867	10	246		272.7	122.9
25	7.05	52 27	9	39 16	258	378	74	340	13	.9091	7	.877	8	273		285.9	135.9
26	7.12	52 18	8	34 58	58	452	74	353	15	.9084	8	.885	6	301	.0011	299.0	149.0
27	7.18	52 10	7	30 40	58	526	75	368	17	.9076	10	.891	4	328		312.2	162.0
28	7.25	52 3	7	26 22	58	601	75	385	20	.9066	11	.895	1	356		325.4	175.1
29	7.32	51 56	7	22 5	57	676	75	405	22	.9055	12	.896		383		338.6	188.2
30	7.38	51 49	6	17 48	256	752	76	427	24	.9043	13	.896	1	410		351.7	201.2
31	7.45	51 43	6	13 32	56	828	77	451	27	.9030	15	.895	1	438	.0011	4.9	214.3
Apr. 1	7.51	51 37	5	9 16	56	905	78	478	30	.9015	16	.894	1	465		18.1	227.4
2	7.58	51 32	5	5 0	55	1.28983	78	508	31	.8999	17	.895	4	492		31.3	240.4
3	7.64	51 27	5	0 45	54	1.29061	79	539	32	.8982	19	.899	7	520		44.5	253.5
4	7.71	51 22	5	4 56 31	254	140	80	571	35	.8963	20	.906	9	547		57.6	266.6
5	7.78	51 17	4	52 17	54	220	81	606	37	.8943	21	.915	11	575	.0012	70.8	279.6
6	7.84	51 13	4	48 3	53	301	82	643	39	.8922	23	.926	12	602		84.0	292.7
7	7.91	51 9	3	43 50	52	383	83	682	40	.8899	24	.938	11	629		97.2	305.8
8	7.97	51 6	3	39 38	51	466	83	722	42	.8875	26	.949	10	657		110.3	318.8
9	8.04	51 3	3	35 27	251	549	84	764	44	.8849	28	.959	8	684		123.5	331.9
10	8.10	51 0	2	31 16	51	633	85	808	46	.8821	28	.967	5	711	.0012	136.7	345.0
11	8.17	50 58	2	27 5	50	718	86	854	47	.8793	30	.972	3	739		149.9	358.0
12	8.24	50 56	2	22 55	49	804	87	901	49	.8763	32	.975	2	766		163.0	11.1
13	8.30	50 54	2	18 46	48	891	88	1.27950	50	.8731	33	.977	1	794		176.2	24.2
14	8.37	50 52	1	14 38	218	1.29979	89	1.28000	51	.8698	34	.978	2	821		189.4	37.2
15	8.43	50 51	1	10 30	47	1.30068	90	051	53	.8664	36	.980	4	848	.0012	202.6	50.3
16	8.50	50 50	1	6 23	46	158	90	104	55	.8628	38	.984	6	876		215.7	63.3
17	8.55	50 49	1	4 2 17	45	248	92	159	56	.8590	39	.990	8	903		228.9	76.4
18	8.63	50 48	1	3 58 12	245	340	92	215	56	.8551	40	2.998	11	931		242.1	89.5
19	8.70	50 47	1	54 7	44	433	93	271	58	.8511	43	3.009	12	958	.0012	255.3	102.5
20	8.76	50 46	1	50 3	43	526	94	329	58	.8468	44	.021	11	1.2985		268.5	115.6
21	8.83	50 45		46 0	42	620	96	387	59	.8424	46	.032	11	1.3013		281.6	128.7
22	8.89	50 45		41 58	211	716	97	446	60	.8378	48	.043	8	040		294.8	141.7
23	8.96	50 45	1	37 57	41	813	98	506	60	.8330	49	.051	7	067	.0012	308.0	154.8
24	9.02	50 44		33 56	40	1.30911	98	566	61	.8281	50	.058	3	095		321.2	167.9
25	9.09	50 44		29 56	39	1.31009	99	627	62	.8231	53	.061	2	122		334.3	180.9
26	9.16	50 44		25 57	238	108	01	689	62	.8178	55	.063		150		347.5	194.0
27	9.22	50 44		21 59	37	209	02	751	63	.8123	56	.063	1	177	.0012	0.7	207.1
28	9.29	50 44		18 2	37	311	02	814	63	.8067	59	.064	3	204		13.9	220.1
29	9.35	50 44		14 5	36	413	103	877	63	.8008	61	.067	4	232		27.0	233.2
30	9.42	12 50 44		3 10 9	231	1.31516	101	1.28940	64	0.7947	62	−3.071	8	−1.3259	.0013	40.2	246.3

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1851.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.* / *i*		$f+\Delta_\zeta f$		*t.*		*p.*		ℭ		ℭ−Γ	
	h.	*h. m. s.*		*h. m. s.*										*s.*		*years.*				°	°
May 1	9.48	12 50 44		3 6 15	225	1.31620	105	1.29004	63	0.7885	65	−3.079	10	−1.3286	.0013			53.4		259.3	
2	9.55	44	1	3 2 20	33	725	106	067	63	.7820	67	.089	12	314				66.6		272.4	
3	9.62	43		2 58 27	32	831	107	130	63	.7753	69	.101	14	341				79.7		285.5	
4	9.68	43		54 35	32	1.31938	108	193	64	.7684	72	.115	14	369				92.9		298.5	
5	9.75	43		50 43	32	1.32046	110	257	63	.7612	74	.129	12	396				106.1		311.6	
6	9.81	43		46 52	231	156	110	320	63	.7538	77	.141	11	423	.0013			119.3		324.6	
7	9.88	42	1	43 2	30	266	111	383	62	.7461	80	.152	8	451				132.5		337.7	
8	9.94	42		39 12	30	377	111	445	62	.7381	82	.160	6	478				145.6		350.8	
9	10.01	41	1	35 23	29	488	112	507	61	.7299	84	.166	4	505				158.8		3.8	
10	10.08	40	1	31 35	28	600	113	568	61	.7215	88	.170	3	532				172.0		16.9	
11	10.14	39	1	27 48	227	713	114	629	60	.7127	90	.173	4	560	.0013			185.2		30.0	
12	10.21	38	1	24 1	27	827	114	689	60	.7037	94	.177	6	588				198.3		43.0	
13	10.27	37	1	20 15	26	1.32941	115	749	59	.6943	98	.183	8	615				211.5		56.1	
14	10.34	35	2	16 30	25	1.33056	116	808	58	.6845	101	.191	10	642				224.7		69.2	
15	10.40	34	1	12 46	24	172	116	866	57	.6744	104	.201	12	670				237.9		82.2	
16	10.47	32	2	9 2	224	288	117	923	57	.6640	108	.213	14	697	.0014			251.0		95.3	
17	10.55	30	2	5 19	23	405	118	1.29980	55	.6532	113	.227	14	725				264.2		108.4	
18	10.61	27	3	2 1 36	23	523	118	1.30035	55	.6419	116	.241	13	752				277.4		121.4	
19	10.67	25	2	1 57 54	22	641	119	090	54	.6303	120	.254	12	779				290.6		134.5	
20	10.73	22	3	54 13	21	760	120	144	52	.6183	125	.266	9	807				303.7		147.6	
21	10.80	19	3	50 33	220	1.33880	120	196	51	.6058	130	.275	7	834	.0014			316.9		160.6	
22	10.86	16	4	46 53	20	1.34000	120	247	50	.5928	135	.282	4	861				330.1		173.7	
23	10.93	12	3	43 14	19	120	121	297	49	.5793	141	.286	3	889				343.3		186.8	
24	11.00	9	4	39 35	19	241	122	346	47	.5652	147	.289	3	916				356.5		199.9	
25	11.06	5	5	35 57	18	362	121	393	46	.5505	154	.292	4	944				9.6		212.9	
26	11.13	12 50 0	4	32 19	218	483	122	439	45	.5351	160	.296	6	971	.0014			22.8		225.9	
27	11.19	12 49 56	4	28 42	17	605	122	484	43	.5191	167	.302	9	1.3998				36.0		239.0	
28	11.26	49 51	5	25 6	16	727	122	527	42	.5024	174	.311	11	1.4026				49.2		252.1	
29	11.32	49 46	5	21 30	16	849	122	569	40	.4850	183	.322	14	053				62.3		265.1	
30	11.39	49 41	5	17 54	16	1.34971	122	609	38	.4667	195	.336	16	080				75.5		278.2	
31	11.46	49 35	6	14 19	215	1.35094	123	647	37	.4472	203	.352	16	108	.0014			88.7		291.3	
June 1	11.52	49 29	7	10 44	15	217	123	684	35	.4269	214	.368	15	135				101.9		304.3	
2	11.59	49 22	6	7 10	14	340	123	719	34	.4055	226	.383	13	163				115.0		317.4	
3	11.65	49 16	7	3 36	14	463	123	753	32	.3829	240	.396	11	190				128.2		330.5	
4	11.72	49 9	7	1 0 3	13	586	122	785	31	.3589	257	.407	8	217				141.4		343.5	
5	11.78	49 2	8	0 56 30	213	708	123	816	29	.3332	273	.415	7	245	.0015			154.6		356.6	
6	11.85	48 54	8	52 57	13	831	123	845	27	.3059	292	.422	5	272				167.7		9.7	
7	11.92	48 46	8	49 24	13	1.35954	123	872	25	.2767	314	.427	6	300				180.9		22.7	
8	11.98	48 38	8	45 52	12	1.36077	123	897	23	.2453	342	.433	6	327				194·1		35.8	
9	12.05	48 30	8	42 20	12	200	123	920	22	0.2111	376	.439	9	354				207.3		48.9	
10	12.11	48 21	9	38 48	212	323	122	942	20	+1.491	131	.448	11	382	.0015			220.4		61.9	
11	12.18	48 12	10	35 17	11	445	122	962	18	.357	134	.459	13	409				233.6		75.0	
12	12.24	48 2	9	31 46	11	567	122	980	16	.223	134	.472	15	436				246.8		88.1	
13	12.31	47 53	10	28 15	11	689	122	1.30996	14	1.089	135	.487	16	464				260.0		101.1	
14	12.37	47 43	11	24 44	11	811	122	1.31010	14	0.954	135	.503	15	491				273.2		114.2	
15	12.44	47 32	10	21 13	211	1.36032	121	023	13	.819	135	.518	14	519	.0015			286.3		127.2	
16	12.51	47 22	11	17 43	10	1.37053	121	034	11	.684	135	.532	11	546				299.5		140.3	
17	12.57	47 11	11	14 12	11	174	120	043	9	.549	135	.543	9	573				312.7		153.4	
18	12.64	47 0	12	10 42	10	294	120	050	7	.414	135	.552	6	601				325.9		166.4	
19	12.70	46 48	12	7 12	210	414	119	055	5	.279	135	.558	4	628	.0016			339.0		179.5	
20	12.77	46 36	12	3 42	10	533	119	058	3	.144	135	.562	4	655				352.2		192.6	
21	12.84	46 24	12	0 0 12	10	652	118	059	1	+0.008	136	.566	5	683				5.4		205.6	
22	12.90	46 12	12	23 56 42	10	770	118	058	1	−0.127	135	.571	6	710				18.6		218.7	
23	12.97	45 59	13	53 12	210	1.37888	117	056	2	.262	135	.577	8	738	.0016			31.7		231.8	
24	13.03	45 46	13	49 42	10	1.38005	116	051	5	.398	136	.585	12	765				44.9		244.8	
25	13.09	45 33	13	46 12	10	121	116	044	7	.533	135	.597	13	792				58.1		257.9	
26	13.16	45 20	13	42 42	10	237	115	035	9	.668	135	.610	16	820				71.3		271.0	
27	13.23	45 6	14	39 12	210	352	115	025	10	.803	135	.626	16	847	.0016			84.4		284.0	
28	13.29	44 52	14	35 42	11	467	114	1.31013	12	0.938	134	.642	16	874				97.6		297.1	
29	13.36	44 38	14	32 11	10	581	114	1.30999	14	1.072	134	.658	15	901				110.8		310.2	
30	13.43	12 44 24	14	23 28 41	210	1.38695	112	1.30983	16	−1.206	134	−3.673	12	−1.4929	.0016			124.0		323.2	
			15						18												

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1851.	Sid. time Wash.	G.		H.		log g.		log h.		log i.		$f + \Delta_\zeta f$		t.	p.	☾	☾−☿
	h.	h. m. s.		h. m. s.								s.		years.		°	°
July 1	13.50	12 44 9	15	23 25 11	211	1.38807	112	1.30965	20	n0.1271	414	−3.685	9	−1.4957	.0016	137.2	336.3
2	13.56	43 54	15	21 40	11	1.38919	111	945	21	.1685	375	.694	7	1.4984		150.3	349.4
3	13.62	43 39	15	18 9	11	1.39030	110	924	23	.2060	344	.701	6	1.5011		163.5	2.4
4	13.69	43 24	15	14 38	12	140	110	901	25	.2404	318	.707	5	039		176.7	15.5
5	13.76	43 9	16	11 6	211	250	109	876	27	.2722	295	.712	6	066		189.9	28.5
6	13.82	42 53	16	7 35	12	359	108	849	28	.3017	275	.718	8	093	.0017	203.0	41.6
7	13.89	42 37	16	4 3	13	467	107	821	30	.3292	257	.726	10	121		216.2	54.7
8	13.95	42 21	16	23 0 30	13	574	106	791	32	.3549	242	.736	12	148		229.4	67.7
9	14.02	42 5	17	22 56 57	13	680	106	759	33	.3791	227	.748	15	176		242.6	80.8
10	14.08	41 48	16	53 24	213	786	104	726	35	.4018	216	.763	15	203		255.7	93.9
11	14.15	41 32	17	49 51	14	890	103	691	37	.4234	206	.778	15	230	.0017	268.9	106.9
12	14.21	41 15	17	46 17	14	1.39993	103	654	38	.4440	194	.793	14	258		282.1	120.0
13	14.28	40 58	17	42 43	15	1.40096	102	616	40	.4634	183	.807	11	285		295.3	133.1
14	14.35	40 41	17	39 8	15	198	101	576	41	.4817	175	.818	9	312		308.5	146.1
15	14.41	40 24	17	35 33	215	299	99	535	43	.4992	169	.827	6	340		321.6	159.2
16	14.48	40 7	17	31 58	16	398	99	492	44	.5161	160	.833	4	367	.0017	334.8	172.3
17	14.55	39 50	18	28 22	17	497	98	448	45	.5321	154	.837	3	395		348.0	185.3
18	14.61	39 32	17	24 45	17	595	97	403	47	.5475	148	.840	4	422		1.2	198.4
19	14.67	39 15	18	21 8	17	692	96	356	48	.5623	140	.844	4	449		14.3	211.5
20	14.74	38 57	17	17 31	218	788	94	308	49	.5763	138	.848	7	477		27.5	224.5
21	14.81	38 40	18	13 53	18	882	94	259	51	.5899	130	.855	9	504	.0017	40.7	237.6
22	14.87	38 22	18	10 15	19	1.40976	93	208	52	.6029	125	.864	12	532		53.9	250.7
23	14.94	38 4	17	6 36	19	1.41069	92	156	53	.6154	121	.876	14	559		67.0	263.7
24	15.00	37 47	18	22 2 57	20	161	91	103	54	.6275	117	.890	14	586		80.2	276.8
25	15.07	37 29	18	21 59 17	221	252	90	1.30049	55	.6392	112	.904	15	614		93.4	289.8
26	15.13	37 11	18	55 36	21	342	89	1.29994	56	.6504	108	.919	13	641	.0018	106.6	302.9
27	15.20	36 53	18	51 55	22	431	88	938	56	.6612	105	.932	12	668		119.7	316.0
28	15.27	36 35	18	48 13	23	519	87	882	58	.6717	101	.944	8	696		132.9	329.0
29	15.33	36 17	17	44 30	23	606	86	824	58	.6818	98	.952	7	723		146.1	342.1
30	15.40	36 0	18	40 47	234	692	85	766	59	.6916	94	.959	4	751		159.3	355.2
31	15.46	35 42	18	37 3	24	777	84	707	60	.7010	90	.963	4	778	.0018	172.4	8.3
Aug. 1	15.53	35 24	18	33 19	25	861	83	647	60	.7100	87	.967	4	805		185.6	21.3
2	15.59	35 6	17	29 34	26	1.41944	82	587	61	.7187	85	.971	5	833		198.8	34.4
3	15.66	34 49	18	25 48	27	1.42026	80	526	61	.7272	83	.976	8	860		212.0	47.4
4	15.73	34 31	18	22 1	227	106	79	465	62	.7355	80	.984	9	887		225.1	60.5
5	15.80	34 13	17	18 14	28	185	79	403	62	.7435	77	3.993	12	915	.0018	238.3	73.6
6	15.86	33 56	17	14 26	29	264	78	341	62	.7512	74	4.005	13	942		251.5	86.6
7	15.92	33 39	18	10 37	30	342	77	279	63	.7586	72	.018	14	970		264.7	99.7
8	15.99	33 21	17	6 47	30	419	76	216	63	.7658	70	.032	12	1.5997		277.9	112.8
9	16.05	33 4	17	21 2 57	231	495	75	153	63	.7728	68	.044	10	1.6024		291.0	125.8
10	16.12	32 47	17	20 59 6	32	570	74	090	63	.7796	65	.054	8	051	.0019	304.2	138.9
11	16.19	32 30	17	55 14	33	644	73	1.29028	63	.7861	63	.062	5	079		317.4	152.0
12	16.25	32 13	16	51 21	33	717	73	1.28965	63	.7924	60	.067	2	106		330.6	165.0
13	16.32	31 57	17	47 28	34	789	72	902	63	.7984	59	.069	1	134		343.7	178.1
14	16.38	31 40	16	43 34	235	860	71	840	62	.8043	57	.070	1	161		356.9	191.1
15	16.45	31 24	16	39 39	36	1.42930	70	778	62	.8100	55	.071	2	189	.0019	10.1	204.2
16	16.51	31 8	16	35 43	36	1.43000	70	716	62	.8155	53	.073	3	216		23.3	217.3
17	16.58	30 52	16	31 47	37	069	69	655	61	.8208	52	.076	7	243		36.4	230.3
18	16.65	30 36	16	27 50	38	137	68	594	61	.8260	50	.083	8	271		49.6	243.4
19	16.71	30 20	15	23 52	239	204	67	534	60	.8310	47	.091	11	299		62.8	256.5
20	16.78	30 5	15	19 53	39	270	66	475	59	.8357	46	.102	13	326	.0019	76.0	269.5
21	16.84	29 50	15	15 54	40	335	65	416	59	.8403	45	.115	12	353		89.1	282.6
22	16.91	29 35	15	11 54	41	400	65	358	58	.8448	42	.127	12	380		102.3	295.7
23	16.97	29 20	15	7 53	241	464	64	300	58	.8490	41	.139	10	408		115.5	308.7
24	17.04	29 5	14	20 3 52	42	527	63	244	56	.8531	39	.149	7	435	.0020	128.7	321.8
25	17.11	28 51	14	19 59 50	43	589	62	189	55	.8570	38	.156	5	462		141.9	334.9
26	17.17	28 37	14	55 47	44	651	62	134	55	.8608	36	.161	3	490		155.0	347.9
27	17.25	28 23	14	51 43	244	712	61	081	53	.8644	35	.164	1	517		168.2	1.0
28	17.30	28 9	13	47 39	45	773	61	1.28029	52	.8679	31	.165	2	545	.0020	181.4	14.1
29	17.37	27 56	13	43 34	46	833	60	1.27979	50	.8713	32	.167	2	572		194.6	27.1
30	17.43	27 43	13	39 28	46	892	59	930	49	.8745	30	.169	5	600		207.7	40.2
31	17.50	12 27 30	13	19 35 22	247	1.43951	59	1.27882	48	n0.8775	29	−4.174	7	−1.6627	.0020	220.9	53.3

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1851.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_\zeta f$		*t.*		*p.*		ℭ	ℭ−Γ
	h	*h. m. s.*		*h. m. s.*								*s.*		*years.*					
Sept. 1	17.57	12 27 17	12	19 31 15	248	1.44009	57	1.27836	41	n0.6804	28	−4.181	9	−1.6654	.0020			234.1	66.3
2	17.63	27 5	12	27 7	48	066	57	792	43	.8832	26	.190	11	681				247.3	79.4
3	17.70	26 53	11	22 59	49	123	57	749	41	.8858	25	.201	12	709				260.4	92.4
4	17.76	26 42	12	18 50	50	180	57	708	39	.8883	24	.213	10	736				273.6	105.5
5	17.83	26 30	11	14 40	250	236	56	669	38	.8907	22	.223	10	764				286.8	118.6
6	17.89	26 19	11	10 30	51	292	56	631	36	.8929	21	.233	6	791	.0020			300.0	131.6
7	17.96	26 8	10	6 19	51	347	55	595	34	.8950	19	.239	4	818				313.2	144.7
8	18.03	12 25 58	10	19 2 8	52	402	55	561	32	.8969	18	.243	2	846				326.3	157.8
9	18.09	48	10	18 57 56	52	456	54	529	32	.8987	18	.245	1	873				339.5	170.8
10	18.16	38	9	53 44	253	510	54	499	30	.9004	17	.244	1	900				352.7	183.9
11	18.22	29	9	49 31	53	564	54	471	28	.9020	16	.243	1	928	.0021			5.9	197.0
12	18.29	20	9	45 18	54	618	53	446	25	.9034	14	.243		955				19.0	210.0
13	18.35	11	9	41 4	54	671	53	422	24	.9047	13	.244	1	1.6983				32.2	223.1
14	18.42	12 25 2	9	36 50	54	724	53	400	22	.9059	12	.248	4	1.7010				45.4	236.2
15	18.49	12 24 54	8	32 36	255	777	53	381	19	.9069	10	.254	6	037				58.6	249.2
16	18.55	46	8	28 21	55	830	52	364	17	.9078	9	.263	9	065	.0021			71.7	262.3
17	18.62	38	7	24 6	55	882	53	349	15	.9086	8	.274	11	092				84.9	275.4
18	18.68	31	7	19 51	56	934	52	338	11	.9093	7	.285	11	119				98.1	288.4
19	18.75	24	7	15 35	56	1.44986	52	328	10	.9098	5	.296	11	147				111.3	301.5
20	18.81	18	6	11 19	256	1.45038	52	320	8	.9102	4	.305	9	174				124.4	314.6
21	18.88	12	6	7 3	56	090	52	315	5	.9104	2	.312	7	202	.0021			137.6	327.6
22	18.95	6	6	18 2 47	56	142	53	312	3	.9105	1	.316	4	229				150.8	340.7
23	19.01	12 24 0	6	17 58 31	56	195	53	312		.9105		.319	3	256				164.0	353.7
24	19.08	12 23 55	5	54 15	57	247	52	314	2	.9104	1	.319		284				177.1	6.8
25	19.14	50	5	49 58	257	300	53	318	4	.9102	2	.320	1	311				190.3	19.9
26	19.21	45	5	45 41	56	353	53	325	7	.9098	4	.321	1	339	.0022			203.5	32.9
27	19.28	41	4	41 25	57	406	53	334	9	.9093	5	.325	4	366				216.7	46.0
28	19.34	36	5	37 8	57	459	53	346	12	.9087	6	.331	6	393				229.9	59.1
29	19.41	32	4	32 51	56	512	53	360	14	.9080	7	.339	8	420				243.0	72.1
30	19.47	29	3	28 35	257	566	54	377	17	.9071	9	.349	10	448				256.2	85.2
Oct. 1	19.54	26	3	24 18	57	620	54	396	19	.9061	10	.360	11	475	.0022			269.4	98.3
2	19.60	23	2	20 1	56	674	54	417	21	.9050	11	.371	11	503				282.6	111.3
3	19.67	21	2	15 45	57	728	54	440	23	.9037	13	.380	9	530				295.7	124.4
4	19.73	19	2	11 28	56	783	55	465	25	.9023	14	.387	7	558				308.9	137.5
5	19.80	17	2	7 12	256	838	55	493	28	.9007	16	.392	5	585				322.1	150.5
6	19.87	15	1	17 2 56	56	894	56	523	30	.8990	17	.394	2	612	.0022			335.3	163.6
7	19.93	14	1	16 58 40	55	1.45950	56	555	32	.8972	18	.394		640				348.4	176.7
8	20.00	13	1	54 25	56	1.46006	57	589	34	.8953	19	.394		667				1.6	189.7
9	20.06	12	1	50 9	55	063	58	625	36	.8932	21	.393	1	694				14.8	202.8
10	20.13	11	1	45 54	255	121	58	663	38	.8910	22	.394	1	722				28.0	215.9
11	20.19	11		41 39	54	179	59	703	40	.8886	24	.397	3	749	.0023			41.1	228.9
12	20.26	11		37 25	54	238	59	745	42	.8861	25	.403	6	777				54.3	242.0
13	20.33	10		33 11	54	297	60	789	44	.8834	27	.412	9	804				67.5	255.0
14	20.39	11		28 57	53	357	60	834	45	.8806	28	.422	10	831				80.7	268.1
15	20.46	12		24 44	253	417	61	881	47	.8776	30	.434	12	859				93.8	281.2
16	20.52	12	1	20 31	52	478	62	930	49	.8745	31	.446	12	886	.0023			107.0	294.2
17	20.59	13	1	16 19	52	540	62	1.27980	50	.8712	33	.457	11	913				120.2	307.3
18	20.65	14	1	12 7	51	602	63	1.28032	52	.8678	34	.466	9	941				133.4	320.4
19	20.72	15	1	7 56	51	665	63	085	53	.8642	36	.472	6	968				146.6	333.4
20	20.79	17	2	16 3 45	251	729	64	140	55	.8604	38	.476	4	1.7996				159.7	346.5
21	20.85	18	1	15 59 34	50	794	65	197	57	.8564	40	.478	2	1.8023	.0023			172.9	359.6
22	20.92	20	2	55 24	49	859	65	254	57	.8524	40	.480	2	050				186.1	12.6
23	20.98	22	2	51 15	49	925	66	312	58	.8482	42	.483	3	078				199.3	25.7
24	21.05	24	2	47 6	48	1.46992	67	371	59	.8438	44	.487	4	105				212.4	38.8
25	21.11	26	2	42 58	248	1.47059	67	432	61	.8392	46	.493	6	133				225.6	51.8
26	21.18	28	2	38 50	47	127	68	493	61	.8344	48	.502	9	160	.0024			238.8	64.9
27	21.25	30	2	34 43	46	196	69	555	62	.8294	50	.513	11	187				252.0	78.0
28	21.31	33	3	30 37	46	266	70	618	63	.8242	52	.526	13	215				265.1	91.0
29	21.38	35	2	26 31	46	336	70	681	63	.8188	54	.539	13	242				278.3	104.1
30	21.44	38	3	22 25	45	407	71	745	64	.8132	56	.551	12	269				291.5	117.2
31	21.51	12 23 40	2 3	15 18 20	244	1.47479	72 73	1.28809	64 65	n0.8073	59 61	−4.561	10 7	−1.8297	.0024			304.7	130.2

TABLE 1—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1851.	Sid. time Wash.	G.		H.		log g.		log h.		$\frac{\log i.}{i}$		$f + \Delta_{\mathfrak{C}} f$		t.	p.	ℭ	ℭ−Γ
	h.	h. m. s.		h. m. s.								s.		years.		°	°
Nov. 1	21.57	12 23 43	2	15 14 16	244	1.47552	74	1.28874	65	n0.8012	62	− 4.568	5	−1.8324	.0024	317.9	143.3
2	21.64	45	3	10 12	43	626	75	1.28939	65	.7950	65	.573	3	352		331.0	156.3
3	21.71	48	3	6 9	42	701	75	1.29004	66	.7885	68	.576	2	379		344.2	169.4
4	21.77	51	2	15 2 7	42	776	76	070	66	.7817	69	.578	1	406		357.4	182.5
5	21.83	53	3	14 58 5	241	852	77	136	65	.7748	72	.579	3	434		10.6	195.5
6	21.90	56	3	54 4	41	1.47929	78	201	66	.7676	75	.582	4	461	.0025	23.7	208.6
7	21.97	12 23 59	2	50 3	40	1.48007	79	267	66	.7601	78	.586	8	488		36.9	221.7
8	22.03	12 24 1	3	46 3	40	086	79	333	65	.7523	81	.594	10	516		50.1	234.7
9	22.10	4	2	42 3	39	165	80	398	65	.7442	84	.604	12	543		63.3	247.8
10	22.17	6	2	38 4	238	245	81	463	65	.7358	86	.616	14	571		76.4	260.9
11	22.23	8	3	34 6	37	326	81	528	64	.7272	89	.630	14	598	.0025	89.6	273.9
12	22.30	11	2	30 9	37	407	82	592	63	.7183	93	.644	14	625		102.8	287.0
13	22.36	13	2	26 12	37	489	83	655	63	.7090	97	.658	13	653		116.0	300.1
14	22.43	15	2	22 15	36	572	83	718	62	.6993	100	.670	12	680		129.1	313.1
15	22.49	17	2	18 19	235	656	84	780	61	.6893	103	.679	9	707		142.3	326.2
16	22.56	19	2	14 24	35	741	85	841	60	.6790	107	.686	7	735	.0025	155.5	339.3
17	22.63	21	1	10 29	34	826	85	901	60	.6683	112	.692	6	762		168.7	352.3
18	22.69	22	2	6 35	33	912	86	1.29961	58	.6571	116	.696	4	790		181.9	5.4
19	22.76	24	1	14 2 42	33	1.48998	86	1.30019	57	.6455	121	.701	5	817		195.0	18.5
20	22.82	25	1	13 58 49	233	1.49085	87	076	57	.6334	126	.707	6	844		208.2	31.5
21	22.89	26	1	54 56	32	173	88	133	55	.6208	131	.715	8	872	.0026	221.4	44.6
22	22.95	27		51 4	31	261	88	188	54	.6077	136	.726	11	899		234.6	57.6
23	23.02	27		47 13	31	350	89	242	53	.5941	142	.739	13	927		247.7	70.7
24	23.08	28		43 22	31	439	89	295	51	.5799	149	.754	15	954		260.9	83.8
25	23.15	29	1	39 31	230	529	90	346	50	.5650	155	.769	15	1.8981		274.1	96.8
26	23.22	29		35 41	29	619	90	396	49	.5495	162	.784	14	1.9009	.0026	287.3	109.9
27	23.28	29		31 52	30	710	91	445	47	.5333	170	.798	11	036		300.4	123.0
28	23.35	29		28 2	29	801	91	492	45	.5163	178	.809	8	063		313.6	136.0
29	23.41	28	1	24 13	28	892	91	537	44	.4985	189	.817	6	091		326.8	149.1
30	23.48	28	1	20 25	228	1.49984	92	581	42	.4796	198	.823	5	118		340.0	162.2
Dec. 1	23.55	27	1	16 37	28	1.50076	92	623	40	.4598	210	.828	3	145	.0027	353.1	175.2
2	23.61	26	2	12 49	27	169	93	663	38	.4388	220	.831	5	173		6.3	188.3
3	23.68	24	1	9 ,2	27	262	93	701	37	.4168	235	.836	6	200		19.5	201.4
4	23.74	23	2	5 15	27	355	93	738	35	.3933	249	.842	8	228		32.7	214.4
5	23.81	21	3	13 1 28	227	448	93	773	33	.3684	267	.850	12	255		45.8	227.5
6	23.87	18	2	12 57 41	26	542	94	806	31	.3417	285	.862	14	282	.0027	59.0	240.6
7	23.94	16	3	53 55	26	636	94	837	29	.3132	307	.876	16	310		72.2	253.6
8	0.01	13	3	50 9	26	730	94	866	27	.2825	331	.892	16	337		85.4	266.7
9	0.07	10	3	46 23	25	824	94	893	25	.2494	359	.908	16	365		98.6	279.8
10	0.14	7	3	42 38	226	1.50918	94	918	24	n0.2135	391	.924	16	392		111.7	292.8
11	0.20	4	4	38 52	25	1.51012	94	942	21	−1.494	142	.939	15	419	.0028	124.9	305.9
12	0.27	12 24 0	4	35 7	25	106	94	963	19	.352	143	.951	12	447		138.1	318.9
13	0.33	12 23 56	4	31 22	24	200	94	982	17	.209	143	.960	9	474		151.3	332.0
14	0.40	52	4	27 38	24	294	94	1.30999	15	1.066	143	.968	8	501		164.4	345.1
15	0.47	47	5	23 53	25	388	94	1.31014	13	0.923	144	.975	7	529		177.6	358.1
16	0.53	42	5	20 8	24	482	94	027	11	.779	144	.981	6	556	.0028	190.8	11.2
17	0.60	37	5	16 24	24	577	95	038	9	.635	144	.988	7	584		204.0	24.3
18	0.66	32	5	12 40	25	671	94	047	6	.491	144	4.997	9	611		217.1	37.3
19	0.73	26	6	8 55	224	764	93	053	4	.346	145	5.008	11	638		230.3	50.4
20	0.79	20	6	5 11	24	857	93	057	1	.201	145	.022	14	666	.0028	243.5	63.5
21	0.86	14	7	12 1 27	24	1.51950	93	058		−0.056	145	.038	16	693		256.7	76.5
22	0.93	7	6	11 57 43	25	1.52043	93	058		+0.089	145	.055	17	720		269.8	89.6
23	0.99	12 23 1	7	53 58	224	136	93	056	2	.234	145	.071	16	748		283.0	102.7
24	1.06	12 22 54	7	50 14	24	228	92	051	5	.378	144	.087	16	775	.0028	296.2	115.7
25	1.12	47	8	46 30	25	320	92	044	7	.523	145	.099	12	803		309.4	128.8
26	1.19	39	8	42 45	25	412	92	035	9	.667	144	.110	11	830		322.6	141.9
27	1.25	31	8	39 0	224	503	91	024	11	.811	144	.117	7	857		335.7	154.9
28	1.32	23	8	35 16	25	593	90	1.31011	13	0.955	144	.123	6	885	.0028	348.9	168.0
29	1.38	15	8	31 31	25	683	90	1.30995	16	1.099	143	.127	4	912		2.1	181.0
30	1.45	12 22 7	8	27 46	26	773	90	978	17	.242	143	.131	1	940		15.3	194.1
31	1.52	12 21 58	9	11 24 0	225	1.52863	90	1.30958	20	+1.385	143	− 5.137	6	−1.9967	.0029	28.4	207.2
			9						21		143		9				

TABLE I.—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0

Epoch Gh. 52m. mean time, Washington.

1852.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f+\Delta f$		*t.*		*p.*	C	C−Γ
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*			°	°
Jan. 1	1.58	12 21 49	9	11 20 15	236	1.52953	83	1.30937	24	0.1840	236	−5.146	11	−1.9994	.0029		41.6	220.2
2	1.65	40	9	16 29	26	1.53041	88	913	26	.2226	353	.157	14	−2.0022			54.8	233.3
3	1.71	31	10	12 43	27	129	87	887	27	.2579	325	.171	15	049			68.0	246.4
4	1.78	21	10	8 56	27	216	87	860	30	.2904	301	.186	17	076			81.1	259.4
5	1.85	11	10	5 9	227	303	86	830	31	.3205	281	.203	16	104			94.3	272.5
6	1.91	12 21 1	10	11 1 22	27	389	85	799	33	.3486	262	.219	15	131	.0029		107.5	285.6
7	1.98	12 20 51	10	10 57 35	28	474	85	766	36	.3748	246	.234	12	159			120.7	298.6
8	2.04	41	10	53 47	28	559	84	730	38	.3994	230	.246	10	186			133.8	311.7
9	2.11	31	11	49 59	28	643	83	692	39	.4224	218	.256	7	213			147.0	324.8
10	2.17	20	11	46 11	229	726	83	653	41	.4442	208	.263	6	241			160.2	337.8
11	2.24	12 20 9	11	42 22	29	809	81	612	43	.4650	196	.269	6	268	.0030		173.4	350.9
12	2.30	12 19 58	11	38 33	30	890	81	569	45	.4846	186	.275	5	295			186.6	4.0
13	2.37	47	11	34 43	30	1.53971	81	524	46	.5032	178	.280	8	323			199.7	17.0
14	2.44	36	11	30 53	30	1.54052	80	478	47	.5210	168	.288	10	350			212.9	30.1
15	2.50	25	11	27 3	231	132	79	431	47	.5378	161	.298	12	378			226.1	43.2
16	2.56	13	12	23 12	31	211	78	382	49	.5539	154	.310	14	405	.0030		239.3	56.2
17	2.63	12 19 2	11	19 21	32	289	77	332	50	.5693	147	.324	15	432			252.4	69.3
18	2.70	12 18 50	12	15 29	33	366	77	280	52	.5840	141	.339	16	460			265.6	82.3
19	2.76	38	12	11 36	33	443	77	227	53	.5981	136	.355	14	487			278.8	95.4
20	2.83	26	12	7 43	233	519	76	172	55	.6117	130	.369	13	514			292.0	108.5
21	2.90	14	12	10 3 50	34	594	75	116	56	.6247	125	.382	10	542	.0030		305.1	121.5
22	2.96	12 18 2	12	9 59 56	35	667	73	058	58	.6372	120	.392	7	569			318.3	134.6
23	3.03	12 17 50	12	56 1	35	740	73	1.30000	59	.6492	116	.399	4	597			331.5	147.7
24	3.09	38	12	52 6	36	812	72	1.29941	60	.6608	111	.403	2	624			344.7	160.7
25	3.16	26	12	48 10	236	884	72	881	60	.6719	107	.405	3	651			357.8	173.8
26	3.22	14	12	44 14	37	1.54955	71	819	62	.6826	104	.408	3	679	.0031		11.0	186.9
27	3.29	12 17 2	12	40 17	38	1.55024	69	757	62	.6930	99	.411	6	706			24.2	199.9
28	3.36	12 16 50	12	36 19	38	093	69	694	63	.7029	95	.417	8	733			37.4	213.0
29	3.42	38	12	32 21	39	161	68	631	63	.7124	92	.425	11	761			50.5	226.1
30	3.49	26	12	28 22	210	229	68	567	64	.7216	89	.436	13	788			63.7	239.1
31	3.55	13	13	24 22	40	296	67	502	65	.7305	86	.449	14	816	.0031		76.9	252.2
Feb. 1	3.62	12 16 1	12	20 22	41	361	65	437	65	.7391	83	.463	13	843			90.1	265.3
2	3.68	12 15 49	12	16 21	42	426	64	371	66	.7474	80	.476	13	870			103.3	278.3
3	3.75	37	12	12 19	42	490	63	305	66	.7554	78	.489	11	898			116.4	291.4
4	3.82	25	12	8 17	243	553	63	239	66	.7632	75	.500	8	925			129.6	304.5
5	3.88	13	12	4 14	44	615	62	173	66	.7707	74	.508	6	953	.0032		142.8	317.5
6	3.95	12 15 1	12	9 0 10	44	677	62	107	66	.7779	69	.514	5	2.0980			156.0	330.6
7	4.01	12 14 49	12	8 56 6	45	738	61	1.29040	67	.7848	66	.519	3	2.1007			169.1	343.6
8	4.08	37	12	52 1	46	798	60	1.28974	66	.7914	64	.522	3	035			182.3	356.7
9	4.14	25	12	47 55	246	857	59	908	66	.7978	62	.525	5	062			195.5	9.8
10	4.21	13	12	43 49	47	915	58	843	65	.8040	60	.530	7	089	.0032		208.7	22.8
11	4.28	12 14 1	12	39 42	48	1.55973	58	778	65	.8100	58	.537	9	117			221.8	35.9
12	4.34	12 13 50	11	35 34	48	1.56030	57	713	65	.8158	56	.546	12	144			235.0	49.0
13	4.41	39	11	31 26	49	086	56	649	64	.8214	54	.558	12	172			248.2	62.0
14	4.47	28	11	27 17	249	141	55	585	64	.8268	51	.570	13	199			261.4	75.1
15	4.54	17	11	23 8	50	195	54	522	63	.8319	49	.583	12	226	.0033		274.5	88.2
16	4.60	12 13 6	11	18 58	51	249	54	459	63	.8368	47	.595	11	254			287.7	101.2
17	4.67	12 12 55	11	14 47	51	302	53	398	61	.8415	46	.606	8	281			300.9	114.3
18	4.74	44	10	10 36	52	355	53	338	60	.8461	44	.614	5	308			314.1	127.4
19	4.80	34	10	6 24	252	407	52	278	60	.8505	42	.619	3	336			327.3	140.4
20	4.87	24	11	8 2 12	53	458	51	220	58	.8547	40	.622	1	363	.0033		340.4	153.5
21	4.93	13	10	7 57 59	53	508	50	163	57	.8587	39	.623		391			353.6	166.6
22	5.00	12 12 3	10	53 46	54	558	50	107	56	.8626	38	.623	1	418			6.8	179.6
23	5.06	12 11 53	9	49 32	55	607	49	1.28053	54	.8664	35	.624	3	445			20.0	192.7
24	5.13	44	9	45 17	255	656	49	1.27999	54	.8699	34	.627	4	473			33.1	205.8
25	5.20	35	9	41 2	55	704	48	948	51	.8733	32	.631	7	500	.0034		46.3	218.8
26	5.26	26	9	36 47	56	752	48	898	50	.8765	30	.638	9	527			59.5	231.9
27	5.33	17	9	32 31	56	799	47	850	48	.8795	29	.647	11	555			72.7	244.9
28	5.39	8	8	28 15	57	846	47	803	47	.8824	28	.658	12	582			85.8	258.0
29	5.46	12 11 0	8	7 23 58	53	1.56892	46	1.27758	45	0.8852	26	−5.670	11	−2.1610	.0034		99.0	271.1

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1852.	Sid. time Wash.	G.		H.		log g.		log h.		log i.		$f + \Delta_{\mathfrak{C}} f$		t.	p.	$\mathfrak{C}$	$\mathfrak{C}-\Gamma$
	h.	h. m. s.		h. m. s.								s.		years.		°	°
Mar. 1	5.52	12 10 52	8	7 19 40	257	1.56938	45	1.27715	42	0.8878	25	−5.681	9	−2.1637	.0034	112.2	284.1
2	5.59	44	8	15 23	58	1.56983	44	673	41	.8903	23	.690	7	664		125.4	297.2
3	5.65	36	8	11 5	58	1.57027	44	632	38	.8926	22	.697	5	692		138.5	310.3
4	5.72	28	7	6 47	59	071	44	594	36	.8948	20	.702	3	719		151.7	323.3
5	5.79	21	7	7 2 28	259	115	44	558	34	.8968	18	.705	1	746		164.9	336.4
6	5.85	14	7	6 58 9	59	159	43	524	31	.8986	17	.706	1	774	.0034	178.1	349.5
7	5.92	7	7	53 50	59	202	43	493	28	.9003	16	.707	3	801		191.3	2.5
8	5.98	12 10 0	6	49 31	60	245	43	465	25	.9019	15	.710	4	829		204.4	15.6
9	6.05	12 9 54	6	45 11	59	288	43	440	22	.9034	13	.714	5	856		217.6	28.7
10	6.11	48	6	40 52	260	330	42	418	20	.9047	12	.719	8	883		230.8	41.7
11	6.18	42	5	36 32	60	372	42	398	18	.9059	11	.727	11	911	.0035	244.0	54.8
12	6.25	37	6	32 12	60	414	42	380	16	.9070	9	.738	12	938		257.1	67.9
13	6.31	31	5	27 52	59	456	42	364	14	.9079	8	.750	12	966		270.3	80.9
14	6.38	26	4	23 33	60	498	41	350	12	.9087	6	.762	10	2.1993		283.5	94.0
15	6.44	22	4	19 13	260	539	42	338	10	.9093	5	.772	8	2.2020		296.7	107.0
16	6.51	18	5	14 53	60	581	41	328	7	.9098	4	.780	5	048	.0035	309.8	120.1
17	6.58	13	4	10 33	59	622	41	321	5	.9102	2	.785	2	075		323.0	133.2
18	6.64	9	4	6 14	60	663	42	316	2	.9104	1	.787	1	102		336.2	146.2
19	6.71	5	3	6 1 54	60	705	41	314		.9105		.786	1	130		349.4	159.3
20	6.77	12 9 2	3	5 57 34	259	746	42	314	3	.9105	1	.785	2	157		2.5	172.4
21	6.84	12 8 59	4	53 15	59	788	41	317	5	.9104	3	.783	0	185	.0036	15.7	185.4
22	6.90	55	3	48 56	59	829	41	322	7	.9101	4	.783	3	212		28.9	198.5
23	6.97	52	3	44 37	59	870	42	329	10	.9097	5	.786	5	239		42.1	211.6
24	7.04	49	2	40 18	59	912	41	339	12	.9092	6	.791	7	267		55.3	224.6
25	7.10	47	2	36 0	258	953	42	351	15	.9086	8	.798	10	294		68.4	237.7
26	7.17	45	2	31 42	58	1.57995	41	366	17	.9078	9	.808	12	321	.0036	81.6	250.8
27	7.23	43	2	27 24	57	1.58036	42	383	19	.9069	11	.820	11	349		94.8	263.8
28	7.30	41	2	23 7	57	078	43	402	21	.9053	12	.831	10	376		108.0	276.9
29	7.36	39	1	18 50	57	121	42	423	23	.9046	13	.841	8	404		121.1	290.0
30	7.43	38		14 33	256	163	43	446	25	.9033	14	.849	5	431		134.3	303.0
31	7.50	38		10 17	56	206	43	471	27	.9019	15	.854	4	458	.0037	147.5	316.1
Apr. 1	7.56	37		6 1	55	248	43	498	29	.9004	17	.858	1	486		160.7	329.2
2	7.63	36		5 1 46	55	291	43	527	31	.8987	18	.859	2	513		173.8	342.2
3	7.69	36		4 57 31	54	334	44	558	34	.8969	20	.861	2	541		187.0	355.3
4	7.76	36		53 17	254	378	44	592	36	.8949	22	.863	3	568		200.2	8.4
5	7.82	36		49 3	53	422	44	628	39	.8927	23	.866	6	595	.0037	213.4	21.4
6	7.89	36		44 50	53	466	44	667	41	.8904	24	.872	8	623		226.5	34.5
7	7.96	36		40 37	53	510	45	708	43	.8880	25	.880	11	650		239.7	47.5
8	8.02	36		36 25	52	555	46	751	46	.8855	27	.891	11	677		252.9	60.6
9	8.09	37	1	32 14	51	601	46	797	47	.8828	29	.902	12	705		266.1	73.7
10	8.15	38	1	28 4	250	647	46	844	48	.8799	30	.914	11	732	.0038	279.2	86.7
11	8.22	39	1	23 54	50	693	46	892	49	.8769	31	.925	9	760		292.4	99.8
12	8.28	40	1	19 45	49	739	47	941	50	.8738	32	.934	6	787		305.6	112.9
13	8.35	41	2	15 37	48	786	48	1.27991	51	.8706	34	.940	3	814		318.7	125.9
14	8.41	43	2	11 29	247	834	48	1.28042	52	.8672	35	.943	2	842		331.9	139.0
15	8.48	45	2	7 22	46	882	48	094	53	.8637	37	.945	1	869	.0038	345.1	152.1
16	8.55	47	2	4 3 16	45	930	49	147	54	.8600	39	.946		896		358.3	165.1
17	8.61	49	2	3 59 11	45	1.58979	50	201	56	.8561	40	.946	2	924		11.5	178.2
18	8.68	51	2	55 6	244	1.59029	50	257	57	.8521	42	.948	3	951		24.7	191.3
19	8.74	53	2	51 2	43	079	51	314	58	.8479	44	.951	6	2.2979	.0039	37.8	204.3
20	8.81	55	2	46 59	42	130	51	372	59	.8435	45	.957	9	2.3006		51.0	217.4
21	8.87	57	2	42 57	42	181	51	431	60	.8390	47	.966	11	033		64.2	230.5
22	8.94	12 8 59	2	38 55	241	232	52	491	60	.8343	49	.977	12	061		77.4	243.5
23	9.01	12 9 1	3	34 54	41	284	53	551	61	.8294	51	5.989	13	088	.0039	90.5	256.6
24	9.07	4	3	30 54	39	337	53	612	62	.8243	53	6.002	11	115		103.7	269.7
25	9.14	7	2	26 55	38	390	53	674	62	.8190	54	.013	9	143		116.9	282.7
26	9.20	9	2	22 57	238	443	54	736	63	.8136	55	.022	8	170		130.1	295.8
27	9.27	11	3	18 59	37	497	55	799	63	.8081	58	.030	6	198	.0040	143.2	308.8
28	9.33	14	3	15 2	36	552	56	862	63	.8023	60	.036	4	225		156.4	321.9
29	9.40	17	3	11 6	35	608	56	925	63	.7963	62	.040	3	252		169.6	335.0
30	9.47	12 9 20	3	3 7 11	231	1.59664	56	1.28988	63	0.7991	64	−6.043	4	−2.3280	.0040	182.8	348.0

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1852.	Sid. time Wash.	G.				H.			log g.		log h.		$\frac{\log i.}{i}$		$f+\Delta_1 f$		t.	p.	ℭ	ℭ−Γ
	h.	h	m.	s.		h.	m.	s.									years.		°	°
May 1	9.53	12	9	23	3	3	3	17	1.59720	57	1.29051	63	0.7837	67	−6.047	4	−2.3307	.0040	196.0	1.1
2	9.60			26	3	2	59	24	777	58	114	63	.7770	69	.051	8	335		209.1	14.2
3	9.66			29	3		55	31	835	58	177	63	.7701	71	.059	9	362		222.3	27.2
4	9.73			32	2		51	39	893	59	240	63	.7530	73	.068	12	389		235.5	40.3
5	9.79			31	3		47	48	1.59952	59	303	63	.7557	77	.080	13	417		248.7	53.4
6	9.86			37	3		43	57	1.60011	60	366	63	.7480	79	.093	14	444	.0040	261.8	66.4
7	9.93			40	3		40	7	071	60	429	62	.7401	81	.107	14	471		275.0	79.5
8	9.99			43	2		36	18	131	61	491	62	.7320	85	.121	13	499		288.2	92.6
9	10.06			45	2		32	30	192	62	553	61	.7235	87	.134	10	526		301.4	105.6
10	10.12			47	3		28	42	254	62	614	60	.7148	89	.144	7	554		314.5	118.7
11	10.19			50	3		24	55	316	62	674	59	.7059	93	.151	5	581	.0041	327.7	131.8
12	10.25			53	2		21	9	378	63	733	59	.6966	96	.156	3	608		340.9	144.8
13	10.32			55	2		17	24	441	63	792	58	.6870	100	.159	3	636		354.1	157.9
14	10.39			57	2		13	39	504	61	850	58	.6770	103	.162	3	663		7.3	171.0
15	10.45	12	9	59	2		9	55	568	64	908	57	.6667	108	.165	4	690		20.4	184.0
16	10.52	12	10	1	2		6	12	632	64	1.29965	56	.6559	111	.169	8	718	.0041	33.6	197.1
17	10.58			3	2	2	2	30	696	65	1.30021	55	.6448	114	.177	10	745		46.8	210.1
18	10.65			5	2	1	58	48	761	66	076	54	.6334	120	.187	12	773		60.0	223.2
19	10.71			7	1		55	7	827	66	130	53	.6214	124	.199	13	800		73.1	236.3
20	10.78			8	2		51	27	893	66	183	53	.6090	130	.212	15	827		86.3	249.3
21	10.85			10	1		47	47	1.60959	67	236	51	.5960	131	.227	14	855	.0042	99.5	262.4
22	10.91			11	1		44	8	1.61026	67	287	49	.5826	140	.241	13	882		112.7	275.5
23	10.98			12	1		40	29	093	68	336	48	.5686	145	.254	11	910		125.8	288.5
24	11.04			13	1		36	51	161	68	384	46	.5541	152	.265	8	937		139.0	301.6
25	11.11			14	1		33	13	229	68	430	45	.5389	159	.273	7	964		152.2	314.7
26	11.17			15	1		29	36	297	68	475	43	.5230	165	.280	5	2.3992	.0042	165.4	327.7
27	11.24			16	1		25	59	365	69	518	42	.5065	173	.285	6	2.4019		178.5	340.8
28	11.31			17			22	23	434	69	560	40	.4892	181	.291	6	046		191.7	353.9
29	11.37			17			18	47	503	70	600	39	.4711	190	.297	8	074		204.9	6.9
30	11.44			17			15	12	573	69	639	37	.4521	201	.305	11	101		218.1	20.0
31	11.50			17			11	37	642	70	676	36	.4320	211	.316	13	129	.0043	231.2	33.1
June 1	11.57			17			8	3	712	70	712	34	.4109	223	.329	15	156		244.4	46.1
2	11.64			17			4	29	782	70	746	32	.3886	237	.344	16	183		257.6	59.2
3	11.70			17	1	1	0	55	852	71	778	30	.3649	253	.360	16	211		270.8	72.3
4	11.77			16		0	57	22	923	70	808	29	.3396	269	.376	16	238		283.9	85.3
5	11.83			16	1		53	49	1.61993	71	837	27	.3127	287	.390	14	265	.0043	297.1	98.4
6	11.90			15	1		50	16	1.62064	71	864	26	.2840	310	.402	12	293		310.3	111.4
7	11.96			14	2		46	44	135	71	890	25	.2530	334	.412	10	320		323.5	124.5
8	12.03			12	2		43	12	206	71	915	23	.2196	364	.420	8	348		336.7	137.6
9	12.10			10	1		39	40	277	71	938	20	0.1832	402	.425	5	375		349.8	150.6
10	12.16			9	2		36	8	348	71	958	18	+1.390	134	.429	4	402	.0044	3.0	163.7
11	12.23			7	2		32	37	419	71	976	16	.256	131	.434	5	430		16.2	176.8
12	12.29			5	2		29	6	490	71	1.30992	15	1.122	134	.439	5	457		29.4	189.8
13	12.36			3	3		25	35	561	71	1.31007	13	0.988	135	.447	8	484		42.5	202.9
14	12.42	12	10	0	2		22	5	632	71	020	11	.853	135	.457	10	512		55.7	216.0
15	12.49	12	9	58	3		18	35	703	71	031	10	.718	135	.471	14	539	.0044	68.9	229.0
16	12.56			55	3		15	5	774	71	041	8	.583	135	.485	14	567		82.1	242.1
17	12.62			52	3		11	35	845	71	049	5	.448	135	.501	16	594		95.2	255.2
18	12.69			49	4		8	5	916	71	054	3	.312	136	.517	16	621		108.4	268.2
19	12.75			45	3		4	35	1.62987	71	057	1	.177	135	.532	15	649		121.6	281.3
20	12.82			42	3	0	1	5	1.63058	71	058	1	+0.042	135	.545	13	676	.0045	134.8	294.4
21	12.88			39	4	23	57	35	129	70	057	2	−0.093	135	.555	10	703		147.9	307.4
22	12.95			35	4		54	5	199	71	055	4	.229	136	.563	8	731		161.1	320.5
23	13.02			31	5		50	35	270	71	051	6	.364	135	.570	7	758		174.3	333.6
24	13.08			26	4		47	5	340	70	045	8	.499	135	.575	5	786		187.5	346.6
25	13.15			22	4		43	35	410	70	037	10	.634	135	.582	7	813	.0045	200.7	359.7
26	13.21			18	5		40	5	479	69	027	11	.769	135	.590	8	840		213.8	12.7
27	13.28			13	5		36	34	549	70	016	13	0.904	135	.601	11	868		227.0	25.8
28	13.34			8	6		33	4	618	69	1.31003	15	1.039	134	.614	13	895		240.2	38.9
29	13.41	12	9	2	5		29	33	687	69	1.30988	17	.173	134	.629	15	923		253.4	51.9
30	13.47	12	8	57	5	23	26	2	1.63756	68	1.30971	19	−1.307	134	−6.646	17	−2.4950	.0046	266.5	65.0

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1852.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_{\mathfrak{C}} f$		*t.*	*p.*	$\mathfrak{C}$	$\mathfrak{C} - 1^{y}$
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
July 1	13.54	12 8 52	6	23 22 31	211	1.63824	68	1.30052	21	n0.1587	382	−6.662	16	−2.4977	.0046	279.7	78.1
2	13.61	46	6	19 0	11	892	68	931	23	.1969	350	.678	13	2.5005		292.9	91.1
3	13.67	40	6	15 29	12	1.63960	68	908	25	.2319	323	.691	11	032		306.1	104.2
4	13.74	34	6	11 57	12	1.64028	67	883	26	.2642	301	.702	7	059		319.2	117.3
5	13.81	28	6	8 25	212	095	67	857	29	.2943	279	.709	6	087		332.4	130.3
6	13.87	22	6	4 53	12	162	66	828	30	.3222	261	.715	4	114	.0046	345.6	143.4
7	13.94	16	7	23 1 21	12	228	66	798	31	.3483	247	.719	4	142		358.8	156.5
8	14.00	9	7	22 57 49	13	294	66	767	33	.3730	232	.723	4	169		12.0	169.5
9	14.07	12 8 2	7	54 16	13	360	66	734	35	.3962	219	.727	7	196		25.1	182.6
10	14.13	12 7 55	7	50 43	213	425	65	699	36	.4181	208	.734	9	224		38.3	195.7
11	14.20	48	7	47 10	14	489	64	663	37	.4389	196	.743	12	251	.0047	51.5	208.7
12	14.26	41	7	43 36	14	553	64	626	39	.4585	187	.755	14	278		64.7	221.8
13	14.33	34	7	40 2	15	617	64	587	41	.4772	179	.769	15	306		77.8	234.9
14	14.39	27	7	36 27	15	681	64	546	43	.4951	169	.784	15	333		91.0	247.9
15	14.46	20	7	32 52	216	744	63	503	44	.5120	169	.799	14	361		104.2	261.0
16	14.53	13	7	29 16	16	806	62	459	45	.5282	162	.813	12	388	.0047	117.4	274.0
17	14.60	12 7 6	8	25 40	17	868	62	414	43	.5437	155	.825	10	415		130.5	287.1
18	14.66	12 6 58	8	22 3	17	930	62	368	46	.5586	149	.835	8	443		143.7	300.2
19	14.72	50	8	18 26	18	1.64991	61	320	48	.5729	143	.843	6	470		156.9	313.2
20	14.79	42	8	14 48	218	1.65051	60	271	49	.5866	137	.849	5	497		170.0	326.3
21	14.85	34	8	11 10	19	111	60	221	50	.5998	132	.854	6	525	.0048	183.2	339.4
22	14.92	26	8	7 31	20	170	59	170	51	.6125	127	.860	6	552		196.4	352.4
23	14.99	18	8	3 51	20	229	59	117	53	.6247	122	.866	8	580		209.6	5.5
24	15.05	10	8	22 0 11	21	288	59	064	53	.6365	118	.874	11	607		222.8	18.6
25	15.12	12 6 2	8	21 56 30	221	346	58	1.30009	55	.6478	113	.885	13	634		235.9	31.6
26	15.18	12 5 54	8	52 49	22	403	57	1.29953	56	.6586	108	.898	14	662	.0048	249.1	44.7
27	15.25	46	8	49 7	22	459	56	896	57	.6691	105	.912	15	689		262.3	57.8
28	15.31	38	9	45 25	23	515	56	839	57	.6793	102	.927	14	716		275.5	70.8
29	15.38	29	9	41 42	24	571	56	781	58	.6892	99	.941	13	744		288.7	83.9
30	15.45	20	8	37 58	224	626	55	722	59	.6988	96	.954	10	771		301.8	97.0
31	15.51	12	9	34 14	25	680	54	662	60	.7080	92	.964	8	799	.0049	315.0	110.0
Aug. 1	15.58	12 5 3	8	30 29	26	734	54	602	60	.7169	89	.972	4	826		328.2	123.1
2	15.64	12 4 55	8	26 43	27	787	53	541	61	.7255	86	.976	3	853		341.4	136.2
3	15.71	47	9	22 56	27	840	53	480	61	.7338	83	.979	2	881		354.5	149.2
4	15.77	33	8	19 9	228	892	52	418	62	.7418	80	.981	2	908		7.7	162.3
5	15.84	30	9	15 21	29	943	51	356	62	.7495	77	.983	4	936	.0049	20.9	175.3
6	15.91	21	8	11 32	29	1.65994	51	294	62	.7569	74	.987	6	963		34.1	188.4
7	15.97	13	8	7 43	30	1.66045	51	232	62	.7641	72	6.993	10	2.5990		47.2	201.5
8	16.04	12 4 5	9	3 53	31	095	50	169	63	.7711	70	7.003	11	2.6018		60.4	214.5
9	16.10	12 3 56	8	21 0 2	231	144	49	106	63	.7779	68	.014	13	045		73.6	227.6
10	16.17	48	8	20 56 11	32	193	49	1.29043	63	.7845	66	.027	13	072	.0050	86.8	240.7
11	16.23	40	8	52 19	33	241	48	1.28981	63	.7908	63	.040	13	100		99.9	253.7
12	16.30	32	8	48 26	34	289	48	918	63	.7970	62	.053	11	127		113.1	266.8
13	16.37	24	8	44 32	35	336	47	855	63	.8030	60	.064	8	155		126.3	279.9
14	16.43	16	8	40 37	235	382	46	793	62	.8087	57	.072	6	182		139.5	292.9
15	16.50	8	8	36 42	35	428	46	731	62	.8142	55	.078	3	209	.0050	152.6	306.0
16	16.56	12 3 0	8	32 46	37	473	45	670	61	.8195	53	.081	3	237		165.8	319.1
17	16.63	12 2 52	8	28 49	38	518	45	609	61	.8247	52	.084	2	264		179.0	332.1
18	16.69	44	8	24 51	38	563	45	548	61	.8297	50	.086	2	291		192.2	345.2
19	16.76	36	8	20 53	239	607	44	488	60	.8345	48	.089	3	319		205.4	358.3
20	16.82	28	8	16 54	40	650	43	429	59	.8392	47	.095	6	346	.0051	218.5	11.3
21	16.89	20	7	12 54	41	693	43	371	58	.8437	45	.103	8	374		231.7	24.4
22	16.96	13	7	8 53	41	736	43	314	57	.8480	43	.113	10	401		244.9	37.5
23	17.02	12 2 6	7	4 52	212	778	42	257	57	.8521	41	.125	12	428		258.1	50.5
24	17.09	12 1 59	7	20 0 50	43	819	41	201	56	.8561	40	.138	13	456	.0051	271.2	63.6
25	17.15	52	7	19 56 47	44	860	41	146	55	.8599	38	.151	13	483		284.4	76.6
26	17.22	45	7	52 43	44	901	41	093	53	.8636	37	.162	11	510		297.6	89.7
27	17.28	38	7	48 39	245	941	40	1.28941	52	.8671	35	.171	9	538		310.8	102.8
28	17.35	32	6	44 34	45	1.66981	40	1.27991	50	.8705	34	.176	5	565	.0052	323.9	115.8
29	17.42	25	7	40 28	46	1.67020	39	941	50	.8737	32	.180	4	593		337.1	128.9
30	17.48	19	6	36 22	46	059	39	893	48	.8768	31	.182	2	620		350.3	142.0
31	17.55	12 1 13	6	19 32 15	47	1.67097	38	1.27846	47	n0.8798	30	−7.181	1	−2.6617	.0052	3.5	155.0
			6		218		38		45		28						

TABLE I.—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1852.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f+\Delta f$		*t.*		*p.*	ℭ	ℭ−Γ
	h.	*h.*	*m.*	*h.*	*m.*	*s.*								*s.*		*years.*		°	°
Sept. 1	17.61	12	1	7	19	28	7	1.67135	38	1.27801	43	n0.8826	25	−7.181	1	−2.6675	.0052	16.7	169.1
2	17.68	12	1	1		23	59	173	37	758	41	.8851	25	.182	4	702		29.8	181.2
3	17.74	12	0	55		19	50	210	37	717	39	.8876	24	.186	6	730		43.0	194.2
4	17.81			49		15	41	247	37	678	39	.8900	23	.192	8	757		56.2	207.3
5	17.88			43		11	31	284	37	640	38	.8923	21	.200	10	784		69.4	220.4
6	17.94			38		7	29	321	37	604	36	.8944	20	.210	12	812	.0052	82.5	233.4
7	18.01			33	19	3	9	357	36	569	35	.8964	19	.222	11	839		95.7	246.5
8	18.07			27	18	58	57	393	36	536	33	.8983	17	.233	9	866		108.9	259.6
9	18.14			22		54	45	429	36	506	30	.9000	16	.242	8	894		122.1	272.6
10	18.20			17		50	33	464	35	477	29	.9016	14	.250	4	921		135.2	285.7
11	18.27			13		46	20	500	36	451	26	.9030	13	.254	3	949	.0053	148.4	298.8
12	18.34			9		42	6	535	35	424	23	.9043	12	.257	2	2.6976		161.6	311.8
13	18.40			4		37	52	569	34	407	21	.9055	11	.259	2	2.7003		174.8	324.9
14	18.47	12	0	0		33	38	604	35	387	20	.9066	9	.261	2	031		187.9	337.9
15	18.53	11	59	56		29	24	639	35	370	17	.9075	8	.263	3	058		201.1	351.0
16	18.60			53		25	9	673	34	355	15	.9083	7	.266	5	085	.0053	214.3	4.1
17	18.66			50		20	54	708	35	342	13	.9090	6	.271	8	113		227.5	17.1
18	18.73			46		16	39	742	34	330	12	.9096	4	.279	11	140		240.7	30.2
19	18.80			43		12	23	776	34	322	8	.9100	3	.290	12	168		253.9	43.3
20	18.86			40		8	7	810	34	316	6	.9103	2	.302	11	195		267.0	56.3
21	18.93			38	18	3	51	844	34	312	4	.9105		.313	11	222	.0054	280.2	69.4
22	18.99			36	17	59	35	878	34	310	2	.9105	1	.324	9	250		293.4	82.5
23	19.06			33		55	18	912	34	312	3	.9104	2	.333	5	277		306.5	95.5
24	19.13			31		51	2	946	34	315	6	.9102	3	.338	3	304		319.7	108.6
25	19.19			29		46	45	1.67980	34	321	9	.9099	4	.341	2	332		332.9	121.7
26	19.26			27		42	28	1.68014	34	330	12	.9095	6	.343	2	359	.0054	346.1	134.7
27	19.32			26		38	11	048	34	342	13	.9089	7	.341	1	387		359.2	147.8
28	19.39			24		33	54	082	34	355	16	.9082	9	.341		414		12.4	160.9
29	19.45			23		29	37	116	34	371	18	.9073	10	.342	2	441		25.6	173.9
30	19.52			22		25	20	150	34	389	21	.9063	11	.344	5	469		38.8	187.0
Oct. 1	19.59			21		21	4	185	35	410	23	.9052	12	.349	7	496	.0055	51.9	200.1
2	19.65			21		16	47	220	34	433	25	.9040	14	.356	10	523		65.1	213.1
3	19.72			21		12	31	254	35	458	27	.9026	15	.366	11	551		78.3	226.2
4	19.78			21		8	14	289	36	485	30	.9011	16	.377	11	578		91.5	239.2
5	19.85			21	17	3	58	325	36	515	31	.8995	18	.388	10	606		104.6	252.3
6	19.91			21	16	59	42	360	35	546	34	.8977	19	.398	8	633	.0055	117.8	265.4
7	19.98			21		55	27	396	36	580	35	.8958	20	.406	6	660		131.0	278.4
8	20.05			21		51	12	431	35	615	37	.8938	22	.412	3	685		144.2	291.5
9	20.11			22	1	46	57	467	37	652	40	.8916	24	.415	2	715		157.4	304.6
10	20.18			23	1	42	42	504	37	692	41	.8892	26	.417	1	743		170.5	317.6
11	20.24			24	1	38	28	541	37	733	43	.8866	26	.418	2	770	.0056	183.7	330.7
12	20.31			25	1	34	14	578	37	776	45	.8840	28	.420	3	797		196.9	343.8
13	20.37			26	1	30	0	615	37	821	47	.8812	29	.423	5	825		210.1	356.8
14	20.44			27	1	25	47	652	38	868	48	.8783	31	.428	9	852		223.2	9.9
15	20.51			28	1	21	34	690	38	916	51	.8752	32	.437	11	879		236.4	23.0
16	20.57			30	2	17	21	729	39	1.27967	52	.8720	31	.448	13	907	.0057	249.6	36.0
17	20.64			32	2	13	9	768	39	1.28019	53	.8686	35	.461	13	934		262.8	49.1
18	20.70			33	1	8	57	807	40	072	55	.8651	37	.474	13	962		275.9	62.2
19	20.77			35	2	4	46	847	40	127	56	.8614	39	.487	10	2.7989		289.1	75.2
20	20.83			37	2	16	0	36	887	41	183	57	.8575	41	.497	8	2.8016	.0057	302.3	88.3
21	20.90			39	3	15	56	26	928	41	240	58	.8534	42	.505	6	044		315.5	101.4
22	20.97			42	3		52	16	1.68969	41	298	59	.8492	45	.511	3	071		328.6	114.4
23	21.03			44	2		48	7	1.69010	42	357	60	.8447	46	.513	2	098		341.8	127.5
24	21.10			46	3		43	58	052	42	417	61	.8401	48	.515		126	.0057	355.0	140.5
25	21.16			49	3		39	50	094	43	478	61	.8353	50	.515	3	153		8.2	153.6
26	21.23			52	3		35	43	137	43	539	63	.8303	51	.518	3	181		21.4	166.7
27	21.39			55	3		31	36	180	43	602	64	.8252	53	.521	3	208		34.5	179.7
28	21.36	11	59	58	3	27	30	223	44	666	64	.8199	56	.528	7	235	.0058	47.7	193.8
29	21.43	12	0	1	3	23	24	267	44	730	64	.8143	56	.537	9	263		60.9	205.9
30	21.49			4	3	19	19	312	45	794	64	.8085	58	.548	11	290		74.1	218.9
31	21.56	12	0	7	3	15	15	15	1.69357	45	1.28859	65	n0.8025	60	−7.561	13	−2.8317	.0059	87.2	232.0

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1852.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		$\frac{\log i.}{i}$		$f + \Delta_{\mathfrak{C}} f$		*t.*	*p.*	$\mathfrak{C}$	$\mathfrak{C} - \Gamma'$
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
Nov. 1	21.62	12 0 9	3	15 11 11	244	1.69403	46	1.28924	65	n0.7963	64	−7.574	12	−2.8345	.0059	100.4	245.1
2	21.69	12	3	7 7	43	449	47	1.28989	66	.7899	67	.586	11	372		113.6	258.1
3	21.76	15	3	15 3 4	42	496	47	1.29055	65	.7832	69	.597	8	400		126.8	271.2
4	21.82	18	3	14 59 2	41	543	48	120	66	.7763	71	.605	6	427		139.9	284.3
5	21.89	21	3	55 1	241	591	48	186	66	.7692	75	.611	5	454		153.1	297.3
6	21.95	24	2	51 0	40	639	49	252	65	.7617	77	.616	4	482	.0059	166.3	310.4
7	22.02	26	3	47 0	39	688	49	317	65	.7540	79	.620	4	509		179.5	323.5
8	22.08	29	3	43 1	39	737	50	382	65	.7461	82	.624	5	537		192.6	336.5
9	22.15	32	3	39 2	38	787	50	447	65	.7379	86	.629	5	564		205.8	349.6
10	22.22	35	3	35 4	238	837	51	512	64	.7293	88	.637	8	591		219.0	2.7
11	22.28	38	3	31 6	37	888	51	576	63	.7205	92	.647	10	619	.0060	232.2	15.7
12	22.35	41	2	27 9	36	939	51	639	63	.7113	96	.659	12	646		245.4	28.8
13	22.41	43	3	23 13	36	1.69991	52	702	62	.7017	99	.674	15	673		258.5	41.8
14	22.48	46	3	19 17	35	1.70043	52	764	62	.6918	102	.689	15	701		271.7	54.9
15	22.54	49	3	15 22	235	096	53	826	61	.6816	107	.704	13	728		284.9	68.0
16	22.61	52	2	11 27	34	149	53	887	60	.6709	111	.717	11	756	.0061	298.1	81.0
17	22.68	54	3	7 33	34	202	53	1.29947	59	.6598	114	.728	9	783		311.2	94.1
18	22.74	57	2	14 3 39	33	256	54	1.30006	57	.6484	120	.737	6	810		324.4	107.2
19	22.81	12 0 59	2	13 59 46	33	311	55	063	56	.6364	126	.743	5	838		337.6	120.2
20	22.87	12 1 2	3	55 53	232	366	55	119	56	.6238	130	.748	3	865		350.8	133.3
21	22.94	4	2	52 1	32	421	55	175	56	.6108	135	.751	5	892	.0061	3.9	146.4
22	23.00	6	2	48 9	31	477	56	230	55	.5973	141	.756	5	920		17.1	159.4
23	23.07	8	2	44 18	31	533	56	283	53	.5832	147	.761	7	947		30.3	172.5
24	23.13	10	2	40 27	30	589	56	335	52	.5685	154	.768	10	2.8975		43.5	185.6
25	23.20	12	2	36 37	230	646	57	385	50	.5531	160	.778	13	2.9002		56.6	198.6
26	23.27	14	2	32 47	29	704	58	433	48	.5371	168	.791	14	029	.0062	69.8	211.7
27	23.33	16	1	28 58	29	761	57	480	47	.5203	178	.805	15	057		83.0	224.8
28	23.40	17	2	25 9	29	819	58	526	46	.5025	185	.820	15	084		96.2	237.9
29	23.46	19	1	21 20	28	878	59	571	45	.4840	195	.835	14	112		109.4	250.9
30	23.53	20	1	17 32	228	937	59	613	42	.4645	206	.849	12	139		122.5	264.0
Dec. 1	23.60	21	1	13 44	28	1.70996	59	653	40	.4439	218	.861	10	166	.0062	135.7	277.0
2	23.66	22	1	9 56	27	1.71055	59	692	39	.4221	231	.871	8	194		148.9	290.1
3	23.73	23		6 9	27	114	59	730	38	.3990	244	.879	6	221		162.1	303.1
4	23.79	23	1	13 2 22	27	174	60	765	35	.3746	262	.885	6	248		175.2	316.2
5	23.86	24		12 58 35	226	234	60	798	33	.3484	279	.891	7	276		188.4	329.3
6	23.92	24	1	54 49	26	294	60	830	32	.3205	302	.898	9	303	.0063	201.6	342.3
7	23.99	23		51 3	26	354	60	860	30	.2903	323	.907	11	331		214.8	355.4
8	0.05	23		47 17	25	414	60	887	27	.2580	352	.918	14	358		227.9	8.5
9	0.12	23		43 32	25	475	61	913	26	.2228	386	.932	16	385		241.1	21.5
10	0.19	23		39 47	225	536	61	936	23	n0.1842	427	.948	17	413		254.3	34.6
11	0·25	23	1	36 2	25	597	61	958	22	−1.385	142	.965	17	440	.0064	267.5	47.7
12	0.32	22	1	32 17	25	658	61	978	20	.243	143	.982	16	467		280.6	60.7
13	0.38	21	1	28 32	24	719	61	1.30985	17	1.100	143	7.998	14	495		293.8	73.8
14	0.45	20	1	24 48	25	780	61	1.31011	16	0.957	144	8.012	12	522		307.0	86.9
15	0.51	19	2	21 3	224	841	61	024	13	.813	144	.024	10	550		320.2	99.9
16	0.58	17	2	17 19	24	903	62	036	12	.669	144	.034	6	577	.0064	333.3	113.0
17	0.65	15	1	13 35	25	1.71964	61	045	9	.525	144	.040	5	604		346.5	126.1
18	0.71	14	2	9 50	24	1.72025	61	052	7	.380	145	.045	5	632		359.7	139.1
19	0.78	12	3	6 6	225	086	61	057	5	.236	144	.050	6	659		12.9	152.2
20	0.84	9	2	12 2 21	24	147	61	059	2	−0.091	145	.056	8	686	.0065	26.0	165.3
21	0.91	7	2	11 58 37	24	209	62	060	1	+0.054	145	.064	11	714		39.2	178.3
22	0.97	5	3	54 53	25	270	61	058	2	.199	144	.075	13	741		52.4	191.4
23	1.04	12 1 2	3	51 8	224	330	60 61	054	4 6	.343	144 144	.088	15	769		65.6	204.4
24	1.11	12 0 59	3	47 24	25	391	61	048	9	.487	145	.103	17	796	.0065	78.8	217.5
25	1.17	56	3	43 39	25	452	61	039	12	.632	144	.120	16	823		91.9	230.6
26	1.24	53	3	39 54	25	513	60	027	13	.776	144	.136	15	851		105.1	243.6
27	1.30	50	3	36 9	225	573	60	014	14	0.920	144	.151	13	878		118.3	256.7
28	1.37	47	4	32 24	25	633	60	1.31000	17	1.064	143	.164	11	905	.0066	131.5	269.8
29	1.43	43	4	28 39	25	693	59	1.30983	20	.207	143	.175	9	933		144.6	282.8
30	1.50	39	4	24 54	25	752	60	963	20	.350	143	.184	7	960		157.8	295.9
31	1.56	12 0 35	4	11 21 9	225	1.72812	59	1.30943	23	+1.493	142	−8.191	6	−2.9988	.0066	171.0	309.0

TABLE I—[illegible] 1850.0

1852.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	C	C−I
Jan. 1	[illegible]	12 6 [illegible]	[illegible]	11 [illegible]	[illegible]	1.72[illegible]	[illegible]	1.30[illegible]	[illegible]	0.[illegible]	[illegible]	−6.[illegible]	[illegible]	−1.0	.0067	1[illegible].8	322.0
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible].4	335.1
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.72[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible].5	345.2
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.7[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		225.7	1.2
5	[illegible]	[illegible]	[illegible]	11 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		226.9	14.3
6	[illegible]	[illegible]	[illegible]	10 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0067	[illegible].1	27.4
7	[illegible]	12 0 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		263.2	40.4
8	[illegible]	11 59 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		276.4	53.5
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		289.6	66.6
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		302.8	79.6
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0067	315.9	92.7
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		329.1	105.7
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		342.3	118.8
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		355.5	131.9
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		8.6	144.9
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0067	21.8	158.0
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		35.0	171.1
18	[illegible]	11 59 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		48.2	184.1
19	[illegible]	11 58 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		61.5	197.2
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		74.5	210.3
21	[illegible]	[illegible]	[illegible]	10 [illegible]	[illegible]	1.73[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0068	87.7	223.3
22	[illegible]	[illegible]	[illegible]	9 [illegible]	[illegible]	1.74[illegible]	[illegible]	1.30[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		100.9	236.4
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.29[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		114.0	249.5
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		127.2	262.5
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		140.4	275.6
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0069	153.6	288.7
27	[illegible]	11 58 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		166.8	301.7
28	[illegible]	11 57 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		179.9	314.8
29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		193.1	327.9
30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		206.3	340.9
31	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0069	219.5	354.0
Feb. 1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		232.6	7.0
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		245.8	20.1
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		259.0	33.2
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		272.2	46.2
5	[illegible]	11 57 [illegible]	[illegible]	9 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.0973	.0070	285.3	59.3
6	[illegible]	11 56 [illegible]	[illegible]	8 [illegible]	[illegible]	[illegible]	[illegible]	1.29[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.1[illegible]		298.5	72.4
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.28[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		311.7	85.4
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		324.9	98.5
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		338.1	111.6
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0071	351.2	124.6
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		4.4	137.7
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		17.6	150.6
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.75011	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		30.8	163.8
14	[illegible]	11 56 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		43.9	176.9
15	[illegible]	11 55 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0071	57.1	190.0
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		70.3	203.0
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		83.5	216.1
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		96.6	229.2
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		109.8	242.2
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0072	123.0	255.3
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		136.2	268.3
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		149.3	281.4
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.28012	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		162.5	294.5
24	[illegible]	11 55 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.27960	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		175.7	307.5
25	[illegible]	11 54 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0072	188.9	320.6
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		202.1	333.7
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		215.2	346.7
28	[illegible]	11 54 [illegible]	[illegible]	[illegible]	[illegible]	1.76545	[illegible]	1.27769	[illegible]	0.8846	[illegible]	−8.707	[illegible]	−3.1603	.0073	228.4	359.8

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1853.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_t f$		*t.*	*p.*	☾	☾−☿
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
Mar. 1	5.51	11 54 38	4	7 20 42	257	1.75577	32	1.27726	41	0.8872	25	−8.716	11	−3.1630	.0073	241.6	12·8
2	5.57	34	5	16 25	58	609	32	685	40	.8897	23	.727	13	658		254.8	25.9
3	5.64	29	4	12 7	58	641	32	645	38	.8920	22	.740	13	685		267.9	39.0
4	5.70	25	4	7 49	58	673	31	607	36	.8942	21	.753	11	713		281.1	52.1
5	5.77	21	4	7 3 31	258	704	31	571	33	.8963	19	.764	9	740	.0074	294.3	65.1
6	5.84	17	4	6 59 12	59	735	31	538	31	.8982	18	.773	5	767		307.5	78.2
7	5.90	13	4	54 53	59	766	31	507	29	.9000	16	.778	4	795		320.6	91.3
8	5.97	9	4	50 34	60	797	30	478	27	.9016	15	.782	2	822		333.8	104.3
9	6.03	5	4	46 14	59	827	30	451	25	.9031	14	.784		849		347.0	117.4
10	6.10	11 54 2	3	41 55	259	857	30	426	23	.9045	12	.784		877	.0074	0.2	130.5
11	6.16	11 53 59	3	37 35	60	887	30	403	20	.9057	11	.784	1	904		13.3	143.5
12	6.23	56	3	33 15	60	917	30	383	17	.9068	9	.785	2	932		26.5	156.6
13	6.30	53	3	28 55	60	946	29	366	15	.9077	8	.787	6	957		39.7	169.6
14	6.36	50	3	24 35	60	1.75975	29	351	13	.9085	7	.793	8	3.1986		52.9	182.7
15	6.43	47	3	20 15	259	1.76005	30	338	10	.9092	5	.801	10	3.2014	.0075	66.0	195.8
16	6.49	45	2	15 55	60	034	29	328	8	.9097	4	.811	10	041		79.2	208.8
17	6.56	43	2	11 35	60	063	29	320	5	.9101	3	.821	10	068		92.4	221.9
18	6.63	41	2	7 15	59	092	29	315	3	.9104	2	.831	10	096		105.6	235.0
19	6.69	39	2	6 2 56	60	121	29	312		.9106		.841	10	123		118.7	248.0
20	6.76	37	2	5 58 36	259	150	29	312	2	.9106	1	.848	7	151	.0076	131.9	261.1
21	6.82	35	2	54 17	59	179	29	314	4	.9105	3	.854	6	178		145.1	274.2
22	6.89	34	1	49 58	59	208	29	318	7	.9102	3	.857	3	205		158.3	287.2
23	6.95	32	2	45 39	58	237	29	325	10	.9099	5	.858	1	233		171.5	300.3
24	7.02	31	1	41 21	58	266	29	335	12	.9094	7	.859	2	260		184.6	313.4
25	7.08	30	1	37 3	258	295	29	347	14	.9087	7	.861	3	287	.0076	197.8	326.4
26	7.15	29	1	32 45	58	324	29	361	16	.9080	9	.864	4	315		211.0	339.5
27	7.22	28	1	28 27	57	353	29	377	19	.9071	10	.868	8	342		224.2	352.6
28	7.28	27	1	24 10	57	382	30	396	21	.9061	12	.876	10	370		237.3	5.6
29	7.35	27	1	19 53	57	412	30	417	23	.9049	13	.886	10	397		250.5	18.7
30	7.41	26	1	15 36	255	442	30	440	25	.9036	14	.898	12	424	.0077	263.7	31.8
31	7.48	26	1	11 20	53	472	30	465	28	.9022	15	.912	14	452		276.9	44.8
Apr. 1	7.54	27		7 4	55	501	29	493	30	.9007	17	.923	11	479		290.0	57.9
2	7.61	27		5 2 49	55	531	30	523	32	.8990	18	.933	10	507		303.2	70.9
3	7.68	28	1	4 58 34	54	561	30	555	31	.8972	20	.941	8	534		316.4	84.0
4	7.74	28		54 20	254	592	31	589	34	.8952	21	.945	4	561		329.6	97.1
5	7.81	29	1	50 6	54	622	30	625	36	.8931	22	.948	3	589	.0078	342.8	110.1
6	7.87	29		45 52	53	653	31	663	38	.8909	23	.948		616		355.9	123.2
7	7.94	30	1	41 39	52	684	31	703	40	.8886	25	.948		643		9.1	136.3
8	8.00	31	1	37 27	51	715	31	745	43	.8861	27	.949	1	671		22.3	149.3
9	8.07	32	1	33 16	251	746	31	788	45	.8834	28	.952	3	698		35.5	162.4
10	8.14	33	1	29 5	50	777	32	833	47	.8806	29	.957	5	726	.0078	48.6	175.5
11	8.20	34	1	24 55	49	809	32	880	48	.8777	30	.964	7	753		61.8	188.5
12	8.27	35	1	20 46	49	841	33	928	49	.8747	32	.975	11	780		75.0	201.6
13	8.33	37	1	16 37	48	874	33	1.27977	51	.8715	34	.986	11	808		88.2	214.7
14	8.40	39	2	12 29	247	907	33	1.28028	53	.8681	35	8.998	12	835		101.3	227.7
15	8.46	41	2	8 22	47	940	33	081	53	.8646	37	9.008	10	862	.0079	114.5	240.8
16	8.53	43	2	4 15	46	1.76973	33	134	54	.8609	39	.017	9	890		127.7	253.9
17	8.60	45	2	4 0 9	45	1.77006	34	188	55	.8570	40	.024	7	917		140.9	266.9
18	8.66	47	2	3 56 4	214	040	34	243	56	.8530	41	.029	5	945		154.0	280.0
19	8.73	49	2	52 0	43	074	34	299	58	.8489	43	.033	4	972		167.2	293.1
20	8.79	51	2	47 57	42	108	35	357	59	.8446	45	.035	2	3.2999	.0080	180.4	306.1
21	8.86	53	2	43 55	41	143	35	416	59	.8401	47	.037	2	3.3027		193.6	319.2
22	8.92	55	2	39 54	211	178	35	475	60	.8354	48	.041	4	054		206.8	332.2
23	8.99	57	2	35 53	40	214	36	535	61	.8306	50	.047	6	082		219.9	345.3
24	9.06	11 53 59	2	31 53	39	250	36	596	62	.8256	52	.056	9	109		233.1	358.4
25	9.12	11 54 1	3	27 54	39	286	36	658	63	.8204	54	.067	11	136	.0080	246.3	11.4
26	9.19	4	2	23 55	238	323	37	721	63	.8150	55	.080	13	164		259.5	24.5
27	9.25	6	3	19 57	37	360	37	784	63	.8095	58	.094	14	191		272.6	37.6
28	9.32	9	2	16 0	36	397	37	847	63	.8037	60	.107	13	218		285.8	50.6
29	9.38	11	3	12 4	35	435	38	910	63	.7977	61	.120	13	246		299.0	63.7
30	9.45	11 54 14	3	3 8 9	235	1.77473	38	1.28973	63	0.7916	63	−9.130	10	−3.3273	.0081	312.2	76.8

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1860.0.

Epoch 6h. 52m. mean time, Washington.

1853.	Sid. time Wash.	G.		H.		log g.		log h.		$\frac{\log i.}{i}$		$f + \Delta_2 f$		t.		p.	☾	☾ − Γ
	h.	h m. s.		h. m. s.										years.			°	°
May 1	9.52	11 54 17	2	3 4 14	231	1.77511	39	1.29036	63	0.7853	66	−9.139	4	−3.3301		.0081	325.3	89.8
2	9.58	19	3	3 0 20	33	550	40	099	64	.7787	68	.143	3	325			338.5	102.9
3	9.65	22	2	2 56 27	33	590	40	163	63	.7719	71	.146	3	355			351.7	116.0
4	9.71	24	2	52 35	31	630	40	226	63	.7648	73	.148	2	383			4.9	129.0
5	9.78	27	3	48 44	231	670	40	289	63	.7575	75	.151	3	410			18.0	142.1
6	9.84	30	2	44 53	30	710	41	352	63	.7500	79	.155	4	437		.0082	31.2	155.2
7	9.91	32	3	41 3	29	751	41	415	62	.7421	81	.161	6	465			44.4	168.2
8	9.98	35	3	37 14	28	792	41	477	62	.7340	83	.171	10	492			57.6	181.3
9	10.04	38	3	33 26	28	833	42	539	62	.7257	86	.182	11	519			70.7	194.4
10	10.11	40	2	29 38	25	875	42	600	61	.7171	90	.196	14	547			83.9	207.4
11	10.17	43	3	25 51	227	917	42	660	60	.7081	93	.209	13	574		.0082	97.1	220.5
12	10.24	45	2	22 5	26	1.77959	43	720	60	.6988	96	.223	14	602			110.3	233.5
13	10.30	48	3	18 19	26	1.78002	43	779	59	.6892	96	.235	12	629			123.5	246.6
14	10.37	50	2	14 34	25	045	43	837	58	.6793	99	.244	9	656			136.6	259.7
15	10.44	53	3	10 50	21	089	44	895	58	.6691	102	.252	8	684			149.8	272.7
16	10.50	55	2	7 7	223	133	44	1.29952	57	.6585	106	.258	6	711		.0083	163.0	285.8
17	10.57	11 54 58	3	2 3 24	23	177	44	1.30008	56	.6475	110	.262	4	739			176.2	298.9
18	10.63	11 55 0	2	1 59 42	22	222	45	063	55	.6361	114	.267	5	766			189.3	311.9
19	10.70	2	2	56 1	21	267	45	117	54	.6242	119	.272	5	793			202.5	325.0
20	10.76	4	2	52 20	21	312	45	170	53	.6119	123	.280	8	821			215.7	338.1
21	10.83	6	2	48 40	220	358	46	222	52	.5991	128	.290	10	848		.0084	228.9	351.1
22	10.90	8	2	45 0	20	404	46	274	52	.5858	133	.303	13	876			242.0	4.2
23	10.96	10	2	41 21	19	450	46	324	50	.5720	138	.318	15	903			255.2	17.3
24	11.03	12	2	37 43	18	596	46	372	48	.5576	144	.334	16	930			268.4	30.3
25	11.09	14	2	34 5	18	543	47	419	47	.5426	150	.351	17	958			281.6	43.4
26	11.16	15	1	30 28	217	590	47	464	45	.5269	157	.366	15	3.3985		.0084	294.7	56.5
27	11.22	17	2	26 51	17	638	48	508	44	.5105	164	.379	13	3.4012			307.9	69.5
28	11.29	18	1	23 15	16	686	48	550	42	.4934	171	.389	10	040			321.1	82.6
29	11.36	19	1	19 39	16	733	47	591	41	.4755	179	.398	9	067			334.3	95.7
30	11.42	20	1	16 4	15	781	48	630	39	.4567	188	.404	6	095			347.5	108.7
31	11.49	21	1	12 29	215	829	48	668	38	.4368	199	.408	4	122		.0085	0.6	121.8
June 1	11.55	22	1	8 55	14	877	48	704	36	.4159	209	.413	5	149			13.8	134.8
2	11.62	23	1	5 21	14	926	49	738	34	.3939	220	.418	5	177			27.0	147.9
3	11.69	24	1	1 1 47	14	1.78974	48	771	33	.3707	232	.426	8	204			40.2	161.0
4	11.75	25	1	0 58 14	13	1.79023	49	802	31	.3457	250	.436	10	231			53.3	174.0
5	11.82	25		54 41	213	072	49	831	29	.3193	264	.448	12	258		.0086	66.5	187.1
6	11.88	25	1	51 8	13	121	49	859	28	.2909	284	.463	15	286			79.7	200.2
7	11.95	26		47 36	12	171	50	885	26	.2606	303	.479	16	313			92.9	213.2
8	12.01	26		44 4	12	221	50	909	24	0.2279	327	.494	15	340			106.0	226.3
9	12.08	26		40 32	13	270	49	932	23		356	.508	14	367			119.2	239.4
10	12.14	26		37 1	211	320	50	953	21	+1.557	134	.520	12	395		.0086	132.4	252.4
11	12.21	26	1	33 30	11	370	50	972	19	.423	134	.530	10	422			145.6	265.5
12	12.28	25		29 59	11	419	49	1.30989	17	.289	134	.538	8	449			158.7	278.6
13	12.34	25	1	26 28	11	469	50	1.31004	15	.155	134	.545	7	477			171.9	291.6
14	12.41	24		22 57	11	519	50	017	13	1.021	135	.550	5	504			185.1	304.7
15	12.47	24	1	19 27	210	569	50	029	12	0.886	135	.556	6	531		.0087	198.3	317.8
16	12.54	23	1	15 57	10	619	50	039	10	.751	135	.564	8	559			211.5	330.8
17	12.60	22	1	12 27	10	669	50	047	8	.616	135	.574	10	586			224.6	343.9
18	12.67	21	1	8 56	11	718	49	053	6	.481	136	.588	14	613			237.8	357.0
19	12.74	20	2	5 26	210	768	50	056	3	.345	135	.603	15	641		.0088	251.0	10.0
20	12.80	18	1	0 1 56	10	818	50	058	2	.210	135	.620	17	668			264.2	23.1
21	12.87	17	2	23 58 26	10	868	50	058		+0.075	135	.637	17	696			277.3	36.1
22	12.93	15	1	54 56	10	918	50	056	2	−0.060	135	.654	17	723			290.5	49.2
23	13.00	14	2	51 26	210	1.79367	49	052	4	.196	135	.669	15	751		.0088	303.7	62.3
24	13.06	12	2	47 56	10	1.80017	50	047	5	.331	135	.681	12	778			316.9	75.3
25	13.13	10	2	44 26	10	067	50	040	7	.466	135	.691	10	806			330.0	88.4
26	13.20	8	3	40 56	10	117	50	031	9	.601	135	.698	7	833			343.2	101.5
27	13.26	5	2	37 26	210	166	49	020	11	.736	135	.703	5	860		.0088	356.4	114.5
28	13.33	3	2	33 55	11	216	50	1.31007	13	0.871	134	.708	5	888			9.6	127.6
29	13.39	11 55 1	3	30 25	10	265	49	1.30992	15	1.005	135	.714	6	915			22.7	140.7
30	13.46	11 54 58	3	23 26 54	11	1.80314	49	1.30975	17	−1.274	134	−9.721	7	−3.4943		.0089	35.9	153.7
					211		49		19		134		10					

TABLE 1—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0

Epoch 6h. 52m. mean time, Washington.

1853.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_C f$		*t.*	*p.*	C	C − Γ'
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
July 1	13.52	11 54 55	3	23 23 23	211	1.80363	49	1.30956	20	n0.1485	393	−9.731	12	−3.4971	.0089	49.1	166.8
2	13.59	52	3	19 52	11	412	49	936	22	.1878	360	.743	14	3.4998		62.3	179.9
3	13.66	49	3	16 21	11	461	48	914	24	.2238	329	.757	16	3.5025		75.5	192.9
4	13.72	46	3	12 50	12	509	48	890	26	.2567	307	.773	15	053		88.6	206.0
5	13.79	43	3	9 18	212	557	48	864	28	.2874	284	.788	15	080		101.8	219.1
6	13.85	40	3	5 46	12	605	48	836	30	.3158	266	.803	13	108	.0090	115.0	232.1
7	13.92	37	3	23 2 14	13	653	47	806	31	.3424	250	.816	10	135		128.2	245.2
8	13.98	34	4	22 58 41	13	700	47	775	32	.3674	233	.826	9	162		141.3	258.3
9	14.05	30	4	55 8	13	747	47	743	32	.3907	223	.835	5	190		154.5	271.3
10	14.12	26	4	51 35	214	794	47	709	34	.4130	209	.840	6	217		167.7	284.4
11	14.18	22	4	48 1	14	841	47	673	36	.4339	200	.846	5	244	.0090	180.9	297.4
12	14.25	18	4	44 27	14	887	46	636	37	.4539	189	.851	7	272		194.0	310.5
13	14.31	14	4	40 53	15	933	46	597	39	.4728	181	.858	9	299		207.2	323.6
14	14.38	10	4	37 18	15	1.80979	46	556	41	.4909	171	.867	12	327		220.4	336.6
15	14.44	6	4	33 43	216	1.81024	45	514	42	.5080	163	.879	14	354		233.6	349.7
16	14.51	11 54 2	4	30 7	16	069	45	471	43	.5243	158	.893	16	381	.0091	246.7	2.8
17	14.58	11 53 58	4	26 31	16	114	45	426	45	.5401	150	.909	16	409		259.9	15.8
18	14.64	54	5	22 55	17	159	45	380	46	.5551	144	.925	16	436		273.1	28.9
19	14.71	49	5	19 18	18	204	45	332	48	.5695	138	.941	15	463		286.3	42.0
20	14.77	44	4	15 40	218	248	44	283	49	.5833	133	.956	12	491		299.5	55.0
21	14.84	40	5	12 2	19	292	44	233	50	.5966	128	.968	9	518	.0092	312.6	68.1
22	14.90	35	5	8 23	19	335	43	182	51	.6094	123	.977	6	546		325.8	81.1
23	14.97	30	5	4 44	20	378	43	130	52	.6217	119	.983	5	573		339.0	94.2
24	15.04	25	5	22 1 4	20	421	43	076	54	.6336	114	.988	4	600		352.2	107.3
25	15.10	20	5	21 57 24	221	463	42	1.30021	55	.6450	110	.992	4	628		5.3	120.4
26	15.17	15	5	53 43	22	504	41	1.29965	56	.6560	106	9.996	4	655	.0092	18.5	133.4
27	15.23	10	5	50 1	22	546	42	909	56	.6666	103	10.000	8	683		31.7	146.5
28	15.30	5	5	46 19	23	587	41	852	57	.6769	99	.008	10	710		44.9	159.6
29	15.36	11 53 0	5	42 36	23	628	41	794	58	.6868	95	.018	11	737		58.0	172.6
30	15.43	11 52 55	5	38 53	224	668	40	735	59	.6963	92	.029	14	765		71.2	185.7
31	15.49	50	5	35 9	25	708	40	675	60	.7055	89	.043	14	792	.0093	84.4	198.7
Aug. 1	15.56	45	5	31 24	26	748	40	615	60	.7144	87	.057	13	819		97.6	211.8
2	15.63	40	5	27 38	26	787	39	554	61	.7231	84	.070	12	847		110.7	224.9
3	15.69	35	5	23 52	27	826	39	493	61	.7315	81	.082	8	874		123.9	237.9
4	15.76	30	6	20 5	228	864	38	432	61	.7396	78	.090	7	902		137.1	251.0
5	15.82	24	5	16 17	29	902	38	370	62	.7474	76	.097	6	929	.0094	150.3	264.1
6	15.89	19	5	12 28	29	940	38	308	62	.7550	73	.103	6	956		163.4	277.1
7	15.95	14	5	8 39	30	1.81977	37	246	62	.7623	71	.106	3	3.5984		176.6	290.2
8	16.02	9	5	4 49	31	1.82014	37	184	63	.7694	68	.109	4	3.6011		189.8	303.3
9	16.09	11 52 4	5	21 0 58	231	051	37	121	63	.7762	66	.113	6	038		203.0	316.3
10	16.15	11 51 59	5	20 57 7	32	087	36	1.29058	62	.7828	64	.119	8	066	.0095	216.2	329.4
11	16.22	54	5	53 15	33	123	36	1.28996	63	.7892	62	.127	12	093		229.3	342.5
12	16.28	49	5	49 22	34	158	35	933	63	.7954	60	.139	14	121		242.5	355.5
13	16.35	44	5	45 28	34	193	35	870	62	.8014	58	.153	14	148		255.7	8.6
14	16.41	39	5	41 34	235	227	34	808	62	.8072	56	.167	14	175		268.9	21.7
15	16.48	34	5	37 39	36	261	34	746	61	.8128	54	.181	13	203	.0095	282.0	34.7
16	16.55	29	5	33 43	37	295	34	685	61	.8182	52	.194	11	230		295.2	47.8
17	16.61	24	5	29 46	37	329	34	624	61	.8234	50	.205	8	257		308.4	60.9
18	16.68	19	5	25 49	38	362	33	563	60	.8284	49	.213	5	285		321.6	73.9
19	16.74	14	5	21 51	239	395	33	503	59	.8333	47	.218	3	312		334.7	87.0
20	16.81	9	5	17 52	40	427	32	444	58	.8380	45	.221	1	340	.0096	347.9	100.0
21	16.87	11 51 4	5	13 52	40	460	33	386	57	.8425	43	.222	2	367		1.1	113.1
22	16.94	11 50 59	5	9 52	41	492	32	329	57	.8468	42	.224	3	394		14.3	126.2
23	17.01	55	4	5 51	242	523	31	272	56	.8510	41	.227	4	422		27.5	139.2
24	17.07	51	5	20 1 49	43	554	31	216	55	.8551	39	.231	6	449	.0097	40.6	152.3
25	17.14	46	4	19 57 46	43	585	30	161	53	.8590	37	.237	6	477		53.8	165.4
26	17.20	42	4	53 43	44	615	30	108	52	.8627	35	.246	9	504		67.0	178.4
27	17.27	38	4	49 39	215	645	30	056	51	.8662	34	.257	11	531		80.2	191.5
28	17.33	34	4	45 34	45	675	29	1.28005	50	.8696	33	.269	12	559	.0098	93.3	204.6
29	17.40	30	4	41 29	46	704	29	1.27955	48	.8729	31	.280	11	586		106.5	217.6
30	17.47	26	4	37 23	47	733	29	907	47	.8760	31	.291	11	613		119.7	230.7
31	17.53	11 50 22	4	19 33 16	217	1 82762	29	1.27860	45	n0.8790	28	−10.298	6	−3.6641	.0098	132.9	243.8

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1860.0.

Epoch 6h 52m. mean time, Washington.

1853.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_\zeta f$		*t.*		*p.*	ℭ	ℭ−Γ
	h	*h. m. s.*		*h. m. s.*										*s.*		*years.*		
Sept. 1	17.60	11 50 18	4	19 29 9	218	1.82791	29	1.27815	41	n0.8818	27	−10.304	3	−3.6668	.0098		146.0	256.8
2	17.66	14	3	25 1	49	820	28	771	42	.8845	26	.307	1	696			159.2	269.9
3	17.73	11	4	20 52	49	848	28	729	40	.8871	24	.308	2	723			172.4	283.0
4	17.79	7	1	16 43	50	876	28	689	38	.8895	25	.310	2	750			185.6	296.0
5	17.86	3	3	12 33	250	904	27	651	36	.8918	22	.312	4	778			198.7	309.1
6	17.93	11 50 0	3	8 23	51	931	27	615	35	.8940	20	.316	5	805	.0099		211.9	322.2
7	17.99	11 49 57	3	4 12	52	958	27	580	33	.8960	18	.321	9	832			225.1	335.2
8	18.06	54	3	19 0 0	52	1.82985	27	547	32	.8978	17	.330	11	860			238.3	348.3
9	18.12	51	3	18 55 48	53	1.83012	26	515	29	.8995	16	.341	12	887			251.5	1.3
10	18.19	48	3	51 35	253	038	26	486	27	.9011	15	.353	12	915			264.6	14.4
11	18.25	45	3	47 22	53	064	26	459	24	.9026	14	.365	13	942	.0099		277.8	27.5
12	18.32	43	2	43 9	54	090	26	435	22	.9040	13	.378	10	969			291.0	40.5
13	18.39	41	2	38 55	54	116	26	413	20	.9053	11	.388	7	3.6997			304.2	53.6
14	18.45	38	3	34 41	55	142	26	393	18	.9064	10	.395	5	3.7024			317.3	66.7
15	18.52	36	2	30 26	255	168	26	375	16	.9074	8	.400	2	051			330.5	79.7
16	18.58	34	2	26 11	55	194	26	359	14	.9082	7	.402		079	.0100		343.7	92.8
17	18.65	32	2	21 56	55	220	26	345	12	.9089	6	.402		106			356.9	105.9
18	18.72	30	2	17 41	56	246	26	333	9	.9095	5	.402	1	134			10.0	118.9
19	18.78	28	2	13 25	56	272	25	324	7	.9100	3	.403	2	161			23.2	132.0
20	18.85	26	2	9 9	256	297	25	317	4	.9103	2	.405	5	188			36.4	145.1
21	18.91	25	1	4 53	57	323	26	313	2	.9105	1	.410	7	216	.0101		49.6	158.1
22	18.98	24	1	18 0 36	56	348	25	311	1	.9106		.417	10	243			62.7	171.2
23	19.04	23	1	17 56 20	57	373	25	312	3	.9106	2	.427	10	270			75.9	184.3
24	19.11	22	1	52 3	56	398	26	315	5	.9104	3	.437	11	298			89.1	197.3
25	19.18	21	1	47 47	257	424	25	320	8	.9101	4	.448	10	325			102.3	210.4
26	19.24	20	1	43 30	56	449	25	328	12	.9097	6	.458	8	353	.0101		115.4	223.5
27	19.31	19	1	39 14	57	474	25	340	13	.9091	7	.466	5	380			128.6	236.5
28	19.37	19		34 57	57	499	25	353	15	.9084	8	.471	4	407			141.8	249.6
29	19.44	19		30 40	56	525	26	368	18	.9076	10	.475	1	435			155.0	262.6
30	19.50	18		26 24	257	550	25	386	20	.9066	11	.476	1	462			168.1	275.7
Oct. 1	19.57	18		22 7	57	576	26	406	22	.9055	12	.477	2	489	.0102		181.3	288.8
2	19.64	18		17 50	56	601	25	428	22	.9043	13	.479	3	517			194.5	301.8
3	19.70	18		13 34	56	627	26	453	25	.9030	15	.482	5	544			207.7	314.9
4	19.77	19		9 18	57	653	26	480	27	.9015	16	.487	7	572			220.9	328.0
5	19.83	19		5 1	256	679	26	509	29	.8999	17	.494	10	599			234.0	341.0
6	19.90	20		17 0 45	56	705	26	540	31	.8982	19	.504	11	626	.0103		247.2	354.9
7	19.96	20	1	16 56 29	55	731	26	573	33	.8963	20	.515	14	654			260.4	7.2
8	20.03	21	1	52 14	55	757	27	607	34	.8943	22	.529	12	681			273.6	20.2
9	20.10	22	1	47 59	55	784	27	644	37	.8921	23	.541	12	709			286.7	33.3
10	20.16	23	1	43 44	254	810	26	683	39	.8898	25	.553	8	736			299.9	46.4
11	20.23	24	1	39 30	54	837	27	724	41	.8873	26	.561	6	763	.0104		313.1	59.4
12	20.29	25	1	35 16	54	865	28	767	43	.8847	27	.567	4	791			326.3	72.5
13	20.36	26	1	31 2	53	892	27	811	44	.8820	27	.571	2	818			339.4	85.6
14	20.42	27	1	26 49	53	920	28	857	46	.8791	29	.573		845			352.6	98.6
15	20.49	28	1	22 36	253	948	28	905	48	.8761	30	.573		873			5.8	111.7
16	20.56	30	2	18 23	52	1.83976	28	1.27955	50	.8729	32	.575	2	900	.0105		19.0	124.8
17	20.62	32	2	14 11	52	1.84004	28	1.28006	51	.8695	34	.578	3	928			32.2	137.8
18	20.69	34	2	9 59	51	032	29	059	53	.8660	35	.583	5	955			45.3	150.9
19	20.75	36	2	5 48	51	061	29	113	54	.8623	37	.590	7	3.7982			58.5	163.9
20	20.82	38	2	16 1 37	250	090	29	168	55	.8585	38	.601	11	3.8010			71.7	177.0
21	20.88	40	2	15 57 27	50	119	29	225	57	.8545	40	.612	11	037	.0105		84.9	190.1
22	20.95	42	2	53 17	49	149	30	283	58	.8503	42	.624	12	064			98.0	203.1
23	21.02	44	2	49 8	49	179	30	342	59	.8459	44	.635	11	092			111.2	216.2
24	21.08	46	2	44 59	49	209	30	401	59	.8414	45	.645	10	119			124.4	229.3
25	21.15	48	2	40 51	248	240	31	461	60	.8367	47	.654	9	147			137.6	242.3
26	21.21	50	2	36 43	47	271	31	522	61	.8317	50	.660	6	174	.0106		150.7	255.4
27	21.28	53	3	32 36	46	303	32	585	63	.8266	51	.663	3	201			163.9	268.5
28	21.34	56	3	28 30	46	335	32	649	64	.8213	53	.665	2	229			177.1	281.5
29	21.41	11 49 58	2	24 24	46	367	32	713	64	.8158	55	.668	3	256			190.3	294.6
30	21.47	11 50 0	2	20 19	45	400	33	777	64	.8101	57	.672	4	284			203.4	307.7
31	21.54	11 50 2	2 3	15 16 14	45 244	1.84433	33 33	1.28342	65 65	n0.8042	59 62	−10.678	6 9	−3.8311	.0107		216.6	320.7

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1853.	Sid. time Wash.	G.		H.		$\log g$.		$\log h$.		$\frac{\log i.}{i}$		$f + \Delta_C f$		t.	p.	$\mathfrak{C}$	$\mathfrak{C} - \Gamma'$
	h.	h. m. s.		h. m. s.								s.		years.		°	°
Nov. 1	21.61	11 50 5	3	15 12 10	243	1.84466	34	1.28907	65	n0.7980	64	−10 687	11	−3.8338	.0107	229.8	333.8
2	21.67	8	2	8 7	43	500	34	1.28972	66	.7916	66	.698	14	366		243.0	346.9
3	21.74	10	3	4 4	42	534	34	1.29038	65	.7850	69	.712	15	393		256.1	359.9
4	21.80	13	3	15 0 2	41	568	34	103	66	.7781	71	.727	15	420		269.3	13.0
5	21.87	16	3	14 56 1	241	602	34	169	65	.7710	73	.742	13	448		282.5	26.1
6	21.93	19	3	52 0	40	637	35	234	66	.7637	76	.755	13	475	.0108	295.7	39.1
7	22.00	22	3	48 0	40	672	35	300	66	.7561	79	.767	12	503		308.9	52.2
8	22.07	25	3	44 0	40	708	36	366	66	.7482	82	.777	10	530		322.0	65.2
9	22.13	27	2	40 1	39	744	36	431	65	.7400	84	.784	7	557		335.2	78.3
10	22.20	30	3	36 3	38	781	37	496	65	.7316	88	.788	4	585		348.4	91.4
11	22.26	32	2	32 5	239	818	37	560	64	.7228	92	.791	3	612	.0109	1.6	104.5
12	22.33	35	3	28 8	37	855	37	623	63	.7136	94	.795	4	639		14.7	117.5
13	22.39	37	2	24 11	37	893	38	686	63	.7042	98	.799	4	667		27.9	130.6
14	22.46	40	3	20 15	36	931	38	748	62	.6944	102	.806	7	694		41.1	143.6
15	22.53	42	2	16 19	36	1.84969	38	810	62	.6842	106	.816	10	722		54.3	156.7
16	22.59	45	3	12 24	235	1.85007	38	871	61	.6736	109	.827	11	749	.0109	67.4	169.8
17	22.66	48	3	8 30	34	046	39	932	61	.6627	114	.841	14	776		70.6	182.8
18	22.72	50	2	4 36	34	085	39	1.29992	61	.6513	119	.855	14	804		93.8	195.9
19	22.79	53	3	14 0 43	33	125	40	1.30050	58	.6394	123	.870	15	831		107.0	209.0
20	22.85	55	2	13 56 50	33	165	40	107	57	.6271	128	.883	13	858		120.1	222.0
21	22.92	11 50 58	3	52 58	232	205	40	162	55	.6143	134	.894	11	886	.0110	133.3	235.1
22	22.99	11 51 0	2	49 6	32	245	40	217	55	.6009	140	.903	9	913		146.5	248.2
23	23.05	2	2	45 15	31	286	41	271	54	.5869	145	.910	7	941		159.7	261.2
24	23.12	4	2	41 24	31	327	41	323	52	.5724	152	.915	5	968		172.8	274.3
25	23.18	6	2	37 34	30	369	42	374	51	.5572	159	.921	6	3.8995		186.0	287.4
26	23.25	8	2	33 44	230	411	42	423	49	.5413	166	.927	6	3.9023	.0111	199.2	300.4
27	23.31	10	2	29 54	30	453	42	470	47	.5247	175	.934	7	050		212.4	313.5
28	23.38	12	2	26 5	29	495	42	516	46	.5072	184	.944	10	078		225.6	326.5
29	23.45	14	2	22 16	29	538	43	561	45	.4888	192	.957	13	105		238.7	339.6
30	23.51	16	2	18 28	28	581	43	604	43	.4696	203	.972	15	132		251.9	352.7
Dec. 1	23.58	17	1	14 40	228	624	43	645	41	.4493	215	10.989	17	160	.0112	265.1	5.7
2	23.64	18	1	10 52	28	667	43	684	39	.4278	228	11.008	19	187		278.3	18.8
3	23.71	19	1	7 5	27	711	44	721	37	.4050	241	.025	17	214		291.4	31.9
4	23.77	20	1	13 3 18	27	755	44	757	36	.3809	258	.039	14	242		304.6	44.9
5	23.84	21	1	12 59 31	27	799	44	790	33	.3551	276	.052	13	269		317.8	58.0
6	23.91	22	1	55 45	226	843	44	822	32	.3275	295	.061	9	297	.0112	331.0	71.1
7	23.97	23	1	51 59	26	887	44	852	30	.2980	320	.069	8	324		344.1	84.1
8	0.04	24	1	48 13	26	931	44	880	28	.2660	346	.075	6	351		357.3	97.2
9	0.10	24		44 28	25	1.85976	45	906	26	.2314	375	.080	5	379		10.5	110.3
10	0.17	25		40 43	25	1.86021	45	930	21	n0.1939	413	.087	7	406		23.7	123.3
11	0.23	25		36 58	225	065	44	952	22	−1.421	143	.095	8	433	.0113	36.9	136.4
12	0.30	26		33 13	25	110	45	972	20	.278	143	.106	11	461		50.0	149.5
13	0.37	26		29 28	25	155	45	1.30990	18	1.135	143	.118	12	488		63.2	162.5
14	0.43	26		25 44	24	200	45	1.31006	16	0.992	143	.133	15	516		76.4	175.6
15	0.50	26		21 59	25	245	45	020	14	.848	144	.149	16	543		89.6	188.7
16	0.56	25		18 15	224	291	46	032	12	.704	144	.166	17	570	.0114	102.7	201.7
17	0.63	25		14 30	25	336	45	041	9	.560	144	.181	15	598		115.9	214.8
18	0.69	24		10 46	24	381	45	049	8	.416	144	.195	14	625		129.1	227.8
19	0.76	24		7 1	25	427	46	054	5	.271	145	.206	11	652		142.3	240.9
20	0.83	23	1	12 3 17	224	473	46	057	3	−0.126	145	.215	9	680	.0115	155.4	254.0
21	0.89	22	1	11 59 32	25	518	45	058	1	+0.018	141	.221	6	707		168.6	267.0
22	0.96	21	1	55 48	24	563	45	057	1	.163	145	.227	6	735		181.8	280.1
23	1.02	20	1	52 3	25	608	45	054	3	.308	145	.233	6	762		195.0	293.9
24	1.09	19	1	48 19	224	653	45	048	6	.452	144	.241	8	789	.0116	208.1	306.9
25	1.15	18	1	44 34	25	698	45	040	8	.597	145	.252	11	817		221.3	319.3
26	1.22	16	2	40 50	24	743	45	030	10	.741	144	.264	12	844		234.5	332.4
27	1.29	14	2	37 5	25	788	45	018	12	0.885	144	.280	16	872		247.7	345.4
28	1.35	12	2	33 20	225	833	45	1.31004	14	1.029	144	.297	17	899	.0117	260.9	358.5
29	1.42	10	2	29 35	25	878	45	1.30987	17	.172	143	.315	18	926		274.0	11.6
30	1.48	8	2	25 49	26	923	45	968	19	.315	143	.333	18	954		287.2	24.6
31	1.55	11 51 6	2	11 22 4	25	1.86967	44	1.30948	20	+1.458	143	−11.349	16	−3.9981	.0117	300.4	37.7
			2		226		45		23		142		15				

TABLE I.—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0

Epoch 6h. 52m. mean time, Washington.

1852.	Sid. time Wash.	G.		H.		log g.		log h.		log i.		$f+\Delta_1 f$		t.		p.	☾	☾−☉
	h.	h. m. s.		h. m. s.								s.		years.			°	°
Jan. 1	1.58	12 21 49	9	11 20 15	226	1.52953	88	1.30937	24	0.1840	386	−5.146	11	−1.9994	.0029		41.6	220.2
2	1.65	40	9	16 29	26	1.53041	88	913	26	.2226	353	.157	14	−2.0022			54.8	233.3
3	1.71	31	10	12 43	27	129	87	887	27	.2579	325	.171	15	049			68.0	246.4
4	1.78	21	10	8 56	27	216	87	860	30	.2904	301	.186	17	076			81.1	259.4
5	1.85	11	10	5 9	227	303	86	830	31	.3205	281	.203	16	104			94.3	272.5
6	1.91	12 21 1	10	11 1 22	27	389	85	799	33	.3486	262	.219	15	131	.0029		107.5	285.6
7	1.98	12 20 51	10	10 57 35	28	474	85	766	36	.3748	246	.234	12	159			120.7	298.6
8	2.04	41	10	53 47	28	550	84	730	38	.3994	230	.246	10	186			133.8	311.7
9	2.11	31	11	49 59	28	643	83	692	39	.4224	218	.256	7	213			147.0	324.8
10	2.17	20	11	46 11	229	726	83	653	41	.4442	208	.263	6	241			160.2	337.8
11	2.24	12 20 9	11	42 22	29	809	81	612	43	.4650	196	.269	6	268	.0030		173.4	350.9
12	2.30	12 19 58	11	38 33	30	890	81	569	45	.4846	186	.275	5	295			186.6	4.0
13	2.37	47	11	34 43	30	1.53971	81	524	46	.5032	178	.280	8	323			199.7	17.0
14	2.44	36	11	30 53	30	1.54052	80	478	47	.5210	168	.288	10	350			212.9	30.1
15	2.50	25	12	27 3	231	132	79	431	49	.5378	161	.298	12	378			226.1	43.2
16	2.56	13	11	23 12	31	211	78	382	50	.5539	154	.310	14	405	.0030		239.3	56.2
17	2.63	12 19 2	12	19 21	33	289	77	332	52	.5693	147	.324	15	432			252.4	69.3
18	2.70	12 18 50	12	15 29	33	366	77	280	53	.5840	141	.339	16	460			265.6	82.3
19	2.76	38	12	11 36	33	443	76	227	55	.5981	136	.355	14	487			278.8	95.4
20	2.83	26	12	7 43	233	519	75	172	56	.6117	130	.369	13	514			292.0	108.5
21	2.90	14	12	10 3 50	34	594	73	116	58	.6247	125	.382	10	542	.0030		305.1	121.5
22	2.96	12 18 2	12	9 59 56	35	667	73	058	58	.6372	120	.392	7	569			318.3	134.6
23	3.03	12 17 50	12	56 1	35	740	72	1.30000	59	.6492	116	.399	4	597			331.5	147.7
24	3.09	38	12	52 6	36	812	72	1.29941	60	.6608	111	.403	2	624			344.7	160.7
25	3.16	26	12	48 10	236	884	71	881	62	.6719	107	.405	3	651			357.8	173.8
26	3.22	14	12	44 14	37	1.54955	69	819	62	.6826	104	.408	3	679	.0031		11.0	186.9
27	3.29	12 17 2	13	40 17	38	1.55024	69	757	63	.6930	99	.411	6	706			24.2	199.9
28	3.36	12 16 50	12	36 19	38	093	68	694	63	.7029	95	.417	8	733			37.4	213.0
29	3.42	38	12	32 21	39	161	68	631	64	.7124	92	.425	11	761			50.5	226.1
30	3.49	26	13	28 22	240	229	67	567	65	.7216	89	.436	13	788			63.7	239.1
31	3.55	13	12	24 22	40	296	65	502	65	.7305	86	.449	14	816	.0031		76.9	252.2
Feb. 1	3.62	12 16 1	12	20 22	41	361	65	437	66	.7391	83	.463	13	843			90.1	265.3
2	3.68	12 15 49	12	16 21	42	426	64	371	66	.7474	80	.476	13	870			103.3	278.3
3	3.75	37	12	12 19	42	490	63	305	66	.7554	80	.489	11	898			116.4	291.4
4	3.82	25	12	8 17	243	553	62	239	66	.7632	78	.500	8	925			129.6	304.5
5	3.88	13	12	4 14	44	615	62	173	66	.7707	75	.508	6	953	.0032		142.8	317.5
6	3.95	12 15 1	13	9 0 10	44	677	61	107	67	.7779	69	.514	5	2.0980			156.0	330.6
7	4.01	12 14 49	12	8 56 6	45	738	60	1.29040	66	.7848	66	.519	3	2.1007			169.1	343.6
8	4.08	37	12	52 1	46	798	59	1.28974	66	.7914	64	.522	3	035			182.3	356.7
9	4.14	25	12	47 55	246	857	58	908	65	.7978	62	.525	5	062			195.5	9.8
10	4.21	13	12	43 49	47	915	58	843	65	.8040	60	.530	7	089	.0032		208.7	22.8
11	4.28	12 14 1	11	39 42	48	1.55973	57	778	65	.8100	58	.537	9	117			221.8	35.9
12	4.34	12 13 50	11	35 34	48	1.56030	57	713	64	.8158	56	.546	12	144			235.0	49.0
13	4.41	39	11	31 26	49	086	56	649	64	.8214	56	.558	12	172			248.2	62.0
14	4.47	28	11	27 17	249	141	55	585	64	.8268	54	.570	12	199			261.4	75.1
15	4.54	17	11	23 8	50	195	54	522	63	.8319	51	.583	13	226	.0033		274.5	88.2
16	4.60	12 13 6	11	18 58	51	249	54	459	63	.8368	49	.595	12	254			287.7	101.2
17	4.67	12 12 55	11	14 47	51	302	53	398	61	.8415	47	.606	11	281			300.9	114.3
18	4.74	44	10	10 36	52	355	53	338	60	.8461	46	.614	8	308			314.1	127.4
19	4.80	34	10	6 24	252	407	52	278	60	.8505	44	.619	5	336			327.3	140.4
20	4.87	24	11	8 2 12	53	458	51	220	58	.8547	42	.622	3	363	.0033		340.4	153.5
21	4.93	13	10	7 57 59	53	508	50	163	57	.8587	40	.623	1	391			353.6	166.6
22	5.00	12 12 3	10	53 46	54	558	50	107	56	.8626	39	.623		418			6.8	179.6
23	5.06	12 11 53	10	49 32	55	607	49	1.28053	54	.8664	38	.624	1	445			20.0	192.7
24	5.13	44	9	45 17	255	656	49	1.27999	54	.8699	35	.627	3	473			33.1	205.8
25	5.20	35	9	41 2	55	704	48	948	51	.8733	34	.631	4	500	.0034		46.3	218.8
26	5.26	26	9	36 47	56	752	48	898	50	.8765	32	.638	7	527			59.5	231.9
27	5.33	17	9	32 31	56	799	47	850	48	.8795	30	.647	9	555			72.7	244.9
28	5.39	8	9	28 15	56	846	47	803	47	.8824	29	.658	11	582			85.8	258.0
29	5.46	12 11 0	8	7 23 58	57	1.56892	46	1.27758	45	0.8852	28	−5.670	12	−2.1610	.0034		99.0	271.1
			8		58		46		43		26		11					

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1852.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_{\mathfrak{C}} f$		*t.*	*p.*	$\mathfrak{C}$	$\mathfrak{C} - \Gamma$
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
Mar. 1	5.52	12 10 52	8	7 19 40	257	1.56938	45	1.27715	42	0.8878	25	—5.681	9	—2.1637	.0034	112.2	284.1
2	5.59	44	8	15 23	58	1.56983	44	673	41	.8903	23	.690	7	664		125.4	297.2
3	5.65	36	8	11 5	58	1.57027	44	632	38	.8926	22	.697	5	692		138.5	310.3
4	5.72	28	7	6 47	59	071	44	594	36	.8948	20	.702	3	719		151.7	323.3
5	5.79	21	7	7 2 28	259	115	44	558	34	.8968	18	.705	1	746		164.9	336.4
6	5.85	14	7	6 58 9	59	159	43	524	31	.8986	17	.706	1	774	.0034	178.1	349.5
7	5.92	7	7	53 50	59	202	43	493	28	.9003	16	.707	3	801		191.3	2.5
8	5.98	12 10 0	6	49 31	60	245	43	465	25	.9019	15	.710	4	829		204.4	15.6
9	6.05	12 9 54	6	45 11	59	288	43	440	22	.9034	13	.714	5	856		217.6	28.7
10	6.11	48	6	40 52	260	330	42	418	20	.9047	12	.719	8	883		230.8	41.7
11	6.18	42	5	36 32	60	372	42	398	18	.9059	11	.727	11	911	.0035	244.0	54.8
12	6.25	37	6	32 12	60	414	42	380	16	.9070	9	.738	12	938		257.1	67.9
13	6.31	31	5	27 52	59	456	42	364	14	.9079	8	.750	12	966		270.3	80.9
14	6.38	26	4	23 33	60	498	41	350	12	.9087	6	.762	10	2.1993		283.5	94.0
15	6.44	22	4	19 13	260	539	42	338	10	.9093	5	.772	8	2.2020		296.7	107.0
16	6.51	18	5	14 53	60	581	41	328	7	.9098	4	.780	5	048	.0035	309.8	120.1
17	6.58	13	4	10 33	59	622	41	321	5	.9102	2	.785	2	075		323.0	133.2
18	6.64	9	4	6 14	60	663	41	316	2	.9104	1	.787	1	102		336.2	146.2
19	6.71	5	3	6 1 54	60	705	42	314	1	.9105		.786	1	130		349.4	159.3
20	6.77	12 9 2	3	5 57 34	259	746	41	314	1	.9105		.785	2	157		2.5	172.4
21	6.84	12 8 59	4	53 15	59	788	42	317	3	.9104	1	.783	0	185	.0036	15.7	185.4
22	6.90	55	3	48 56	59	829	41	322	5	.9101	3	.783	3	212		28.9	198.5
23	6.97	52	3	44 37	59	870	41	329	7	.9097	4	.786	5	239		42.1	211.6
24	7.04	49	2	40 18	59	912	42	339	10	.9092	5	.791	7	267		55.3	224.6
25	7.10	47	2	36 0	258	953	41	351	12	.9086	6	.798	10	294		68.4	237.7
26	7.17	45	2	31 42	58	1.57995	42	366	15	.9078	8	.808	12	321	.0036	81.6	250.8
27	7.23	43	2	27 24	57	1.58036	41	383	17	.9069	9	.820	11	349		94.8	263.8
28	7.30	41	2	23 7	57	078	42	402	19	.9053	11	.831	10	376		108.0	276.9
29	7.36	39	2	18 50	57	121	43	423	21	.9046	12	.841	8	404		121.1	290.0
30	7.43	38	1	14 33	256	163	42	446	23	.9033	13	.849	5	431		134.3	303.0
31	7.50	38		10 17	56	206	43	471	25	.9019	14	.854	4	458	.0037	147.5	316.1
Apr. 1	7.56	37		6 1	55	248	42	498	27	.9004	15	.858	1	486		160.7	329.2
2	7.63	36	5	1 46	55	291	43	527	29	.8987	17	.859	2	513		173.8	342.2
3	7.69	36	4	57 31	54	334	43	558	31	.8969	18	.861	2	541		187.0	355.3
4	7.76	36		53 17	254	378	44	592	34	.8949	20	.863	3	568		200.2	8.4
5	7.82	36		49 3	53	422	44	628	36	.8927	22	.866	6	595	.0037	213.4	21.4
6	7.89	36		44 50	53	466	44	667	39	.8904	23	.872	8	623		226.5	34.5
7	7.96	36		40 37	52	510	44	708	41	.8880	24	.880	11	650		239.7	47.5
8	8.02	36		36 25	51	555	45	751	43	.8855	25	.891	11	677		252.9	60.6
9	8.09	37	1	32 14	250	601	46	797	46	.8828	27	.902	12	705		266.1	73.7
10	8.15	38	1	28 4	50	647	46	844	47	.8799	29	.914	11	732	.0038	279.2	86.7
11	8.22	39	1	23 54	49	693	46	892	48	.8769	30	.925	9	760		292.4	99.8
12	8.28	40	1	19 45	48	739	46	941	49	.8738	31	.934	6	787		305.6	112.9
13	8.35	41	2	15 37	48	786	47	1.27991	50	.8706	32	.940	3	814		318.7	125.9
14	8.41	43	2	11 29	247	834	48	1.28042	51	.8672	34	.943	2	842		331.9	139.0
15	8.48	45	2	7 22	46	882	48	094	52	.8637	35	.945	1	869	.0038	345.1	152.1
16	8.55	47	4	3 16	45	930	48	147	53	.8600	37	.946		896		358.3	165.1
17	8.61	49	3	59 11	45	1.58979	49	201	54	.8561	39	.946		924		11.5	178.2
18	8.68	51	2	55 6	244	1.59029	50	257	56	.8521	40	.948	2	951		24.7	191.3
19	8.74	53	2	51 2	43	079	50	314	57	.8479	42	.951	3	2.2979	.0039	37.8	204.3
20	8.81	55	2	46 59	42	130	51	372	58	.8435	44	.957	6	2.3006		51.0	217.4
21	8.87	57	2	42 57	42	181	51	431	59	.8390	45	.966	9	033		64.2	230.5
22	8.94	12 8 59	2	38 55	241	232	51	491	60	.8343	47	.977	11	061		77.4	243.5
23	9.01	12 9 1	3	34 54	40	284	52	551	60	.8294	49	5.989	12	088	.0039	90.5	256.6
24	9.07	4	3	30 54	39	337	53	612	61	.8243	51	6.002	13	115		103.7	269.7
25	9.14	7	2	26 55	38	390	53	674	62	.8190	53	.013	11	143		116.9	282.7
26	9.20	9	2	22 57	238	443	53	736	63	.8136	54	.022	9	170		130.1	295.8
27	9.27	11	3	18 59	37	497	54	799	63	.8081	55	.030	8	198	.0040	143.2	308.8
28	9.33	14	3	15 2	36	552	55	862	63	.8023	58	.036	6	225		156.4	321.9
29	9.40	17	3	11 6	35	608	56	925	63	.7963	60	.040	4	252		169.6	335.0
30	9.47	12 9 20	3	3 7 11	231	1.59664	56	1.28988	63	0.7991	62	—6.043	3	—2.3280	.0040	182.8	348.0
							56		63		64		4				

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1852.	Sid. time Wash.	G.		H.		log g.		log h.		$\frac{\log i.}{i}$		$f+\Delta_{\zeta} f$		t.	p.	☾	☾−Γ
	h.	h m. s.		h. m. s.										years.		°	°
May 1	9.53	12 9 23	3	3 3 17	233	1.59720	57	1.29051	63	0.7837	67	−0.047	4	−2.3307	.0040	196.0	1.1
2	9.60	26	3	2 59 24	33	777	58	114	63	.7770	69	.051	8	335		209.1	14.2
3	9.66	29	3	55 31	32	835	58	177	63	.7701	71	.059	9	362		222.3	27.2
4	9.73	32	2	51 39	31	893	59	240	63	.7530	73	.068	12	389		235.5	40.3
5	9.79	34	3	47 48	231	1.59952	59	303	63	.7557	77	.080	13	417		248.7	53.4
6	9.86	37	3	43 57	30	1.60011	60	366	63	.7480	79	.093	14	444	.0040	261.8	66.4
7	9.93	40	3	40 7	29	071	60	429	62	.7401	81	.107	14	471		275.0	79.5
8	9.99	43	2	36 18	28	131	61	491	62	.7320	85	.121	13	499		288.2	92.6
9	10.06	45	2	32 30	28	192	62	553	61	.7235	87	.134	10	526		301.4	105.6
10	10.12	47	3	28 42	227	254	62	614	60	.7148	89	.144	7	554		314.5	118.7
11	10.19	50	3	24 55	26	316	62	674	59	.7059	93	.151	5	581	.0041	327.7	131.8
12	10.25	53	2	21 9	25	378	63	733	59	.6966	96	.156	3	608		340.9	144.8
13	10.32	55	2	17 24	25	441	63	792	58	.6870	100	.159	3	636		354.1	157.9
14	10.39	57	2	13 39	24	504	61	850	58	.6770	103	.162	3	663		7.3	171.0
15	10.45	12 9 59	2	9 55	223	568	64	908	57	.6667	108	.165	4	690		20.4	184.0
16	10.52	12 10 1	2	6 12	22	632	64	1.29965	56	.6559	111	.169	8	718	.0041	33.6	197.1
17	10.58	3	2	2 2 30	22	696	65	1.30021	55	.6448	111	.177	10	745		46.8	210.1
18	10.65	5	2	1 58 48	21	761	66	076	54	.6334	120	.187	12	773		60.0	223.2
19	10.71	7	1	55 7	20	827	66	130	53	.6214	121	.199	13	800		73.1	236.3
20	10.78	8	2	51 27	220	893	66	183	53	.6090	130	.212	15	827		86.3	249.3
21	10.85	10	1	47 47	19	1.60959	67	236	51	.5960	131	.227	14	855	.0042	99.5	262.4
22	10.91	11	1	44 8	19	1.61026	67	287	49	.5826	140	.241	13	882		112.7	275.5
23	10.98	12	1	40 29	18	093	68	336	48	.5686	145	.254	11	910		125.8	288.5
24	11.04	13	1	36 51	18	161	68	384	48	.5541	152	.265	8	937		139.0	301.6
25	11.11	14	1	33 13	217	229	68	430	46	.5389	159	.273	7	964		152.2	314.7
26	11.17	15	1	29 36	17	297	68	475	45	.5230	165	.280	5	2.3992	.0042	165.4	327.7
27	11.24	16	1	25 59	16	365	69	518	43	.5065	173	.285	6	2.4019		178.5	340.8
28	11.31	17		22 23	16	434	69	560	42	.4892	181	.291	6	046		191.7	353.9
29	11.37	17		18 47	15	503	70	600	40	.4711	190	.297	8	074		204.9	6.9
30	11.44	17		15 12	215	573	69	639	39	.4521	201	.305	11	101		218.1	20.0
31	11.50	17		11 37	14	642	70	676	37	.4320	211	.316	13	129	.0043	231.2	33.1
June 1	11.57	17		8 3	14	712	70	712	36	.4109	223	.329	15	156		244.4	46.1
2	11.64	17		4 29	14	782	70	746	34	.3886	237	.344	16	183		257.6	59.2
3	11.70	17	1	1 0 55	13	852	71	778	32	.3649	253	.360	16	211		270.8	72.3
4	11.77	16		0 57 22	213	923	70	808	30	.3396	269	.376	14	238		283.9	85.3
5	11.83	16	1	53 49	13	1.61993	71	837	29	.3127	287	.390	12	265	.0043	297.1	98.4
6	11.90	15	1	50 16	12	1.62064	71	864	27	.2840	310	.402	10	293		310.3	111.4
7	11.96	14	2	46 44	12	135	71	890	26	.2530	334	.412	8	320		323.5	124.5
8	12.03	12	2	43 12	12	206	71	915	25	.2196	364	.420	5	348		336.7	137.6
9	12.10	10	1	39 40	212	277	71	938	23	0.1832	402	.425	4	375		349.8	150.6
10	12.16	9	2	36 8	11	348	71	958	20	+1.390	134	.429	5	402	.0044	3.0	163.7
11	12.23	7	2	32 37	11	419	71	976	18	.256	134	.434	5	430		16.2	176.8
12	12.29	5	2	29 6	11	490	71	1.30992	16	1.122	134	.439	8	457		29.4	189.8
13	12.36	3	3	25 35	10	561	71	1.31007	15	0.988	134	.447	10	484		42.5	202.9
14	12.42	12 10 0	2	22 5	210	632	71	020	13	.853	135	.457	14	512		55.7	216.0
15	12.49	12 9 58	3	18 35	10	703	71	031	11	.718	135	.471	14	539	.0044	68.9	229.0
16	12.56	55	3	15 5	10	774	71	041	10	.583	135	.485	16	567		82.1	242.1
17	12.62	52	3	11 35	10	845	71	049	8	.448	135	.501	16	594		95.2	255.2
18	12.69	49	4	8 5	210	916	71	054	5	.312	136	.517	15	621		108.4	268.2
19	12.75	45	3	4 35	10	1.62987	71	057	3	.177	135	.532	13	649		121.6	281.3
20	12.82	42	3	0 1 5	10	1.63058	71	058	1	+0.042	135	.545	10	676	.0045	134.8	294.4
21	12.88	39	4	23 57 35	10	129	70	057	2	−0.093	135	.555	8	703		147.9	307.4
22	12.95	35	4	54 5	210	199	71	055	4	.229	136	.563	7	731		161.1	320.5
23	13.02	31	5	50 35	10	270	71	051	6	.364	135	.570	5	758		174.3	333.6
24	13.08	26	4	47 5	10	340	70	045	8	.499	135	.575	7	786		187.5	346.6
25	13.15	22	4	43 35	10	410	70	037	10	.634	135	.582	8	813	.0045	200.7	359.7
26	13.21	18	5	40 5	211	479	69	027	11	.769	135	.590	11	840		213.8	12.7
27	13.28	13	5	36 34	10	549	70	016	13	0.904	135	.601	13	868		227.0	25.8
28	13.34	8	6	33 4	11	618	69	1.31003	15	1.039	134	.614	15	895		240.2	38.9
29	13.41	12 9 2	5	29 33	10	687	69	1.30988	17	.173	134	.629	17	923		253.4	51.9
30	13.47	12 8 57	5	23 26 2	211	1.63756	68	1.30971	19	−1.307	134	−6.646	16	−2.4950	.0046	266.5	65.0

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1852.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_{\mathfrak{C}} f$		*t.*	*p.*	$\mathfrak{C}$	$\mathfrak{C} - \mathrm{I}^{\mathrm{V}}$
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
July 1	13.54	12 8 52	6	23 22 31	211	1.63824	63	1.30952	21	n0.1587	382	−6.662	16	−2.4977	.0046	279.7	78.1
2	13.61	46	6	19 0	11	892	68	931	23	.1969	350	.678	13	2.5005		292.9	91.1
3	13.67	40	6	15 29	12	1.63960	68	908	25	.2319	323	.691	11	032		306.1	104.2
4	13.74	34	6	11 57	12	1.64028	67	883	25	.2642	301	.702	7	059		319.2	117.3
5	13.81	28	6	8 25	212	095	67	857	29	.2943	279	.709	6	087		332.4	130.3
6	13.87	22	6	4 53	12	162	66	828	30	.3222	261	.715	4	114	.0046	345.6	143.4
7	13.94	16	7	23 1 21	12	228	66	798	31	.3483	247	.719	4	142		358.8	156.5
8	14.00	9	7	22 57 49	13	294	66	767	33	.3730	232	.723	4	169		12.0	169.5
9	14.07	12 8 2	7	54 16	13	360	65	734	35	.3962	219	.727	7	196		25.1	182.6
10	14.13	12 7 55	7	50 43	213	425	61	699	36	.4181	208	.734	9	224		38.3	195.7
11	14.20	48	7	47 10	14	489	64	663	37	.4389	196	.743	12	251	.0047	51.5	208.7
12	14.26	41	7	43 36	14	553	64	626	39	.4585	187	.755	14	278		64.7	221.8
13	14.33	34	7	40 2	15	617	64	587	41	.4772	179	.769	15	306		77.8	234.9
14	14.39	27	7	36 27	15	681	63	546	43	.4951	169	.784	15	333		91.0	247.9
15	14.46	20	7	32 52	216	744	62	503	44	.5120	162	.799	14	361		104.2	261.0
16	14.53	13	7	29 16	16	806	62	459	45	.5282	155	.813	12	388	.0047	117.4	274.0
17	14.60	12 7 6	8	25 40	17	868	62	414	46	.5437	149	.825	10	415		130.5	287.1
18	14.66	12 6 58	8	22 3	17	930	61	368	48	.5586	143	.835	8	443		143.7	300.2
19	14.72	50	8	18 26	18	1.64991	60	320	49	.5729	137	.843	6	470		156.9	313.2
20	14.79	42	8	14 48	218	1.65051	60	271	50	.5866	132	.849	5	497		170.0	326.3
21	14.85	34	8	11 10	19	111	59	221	51	.5998	127	.854	6	525	.0048	183.2	339.4
22	14.92	26	8	7 31	20	170	59	170	53	.6125	122	.860	6	552		196.4	352.4
23	14.99	18	8	3 51	20	229	59	117	53	.6247	118	.866	8	580		209.6	5.5
24	15.05	10	8	22 0 11	21	288	59	064	53	.6365	113	.874	11	607		222.8	18.6
25	15.12	12 6 2	8	21 56 30	221	346	58	1.30009	55	.6478	108	.885	13	634		235.9	31.6
26	15.18	12 5 54	8	52 49	22	403	57	1.29953	56	.6586	105	.898	14	662	.0048	249.1	44.7
27	15.25	46	8	49 7	22	459	56	896	57	.6691	102	.912	15	689		262.3	57.8
28	15.31	38	9	45 25	23	515	56	839	57	.6793	99	.927	14	716		275.5	70.8
29	15.38	29	9	41 42	24	571	56	781	58	.6892	96	.941	13	744		288.7	83.9
30	15.45	20	8	37 58	224	626	55	722	59	.6988	92	.954	10	771		301.8	97.0
31	15.51	12	9	34 14	25	680	54	662	60	.7080	89	.964	8	799	.0049	315.0	110.0
Aug. 1	15.58	12 5 3	8	30 29	25	734	54	602	60	.7169	86	.972	4	826		328.2	123.1
2	15.64	12 4 55	8	26 43	27	787	53	541	61	.7255	83	.976	3	853		341.4	136.2
3	15.71	47	9	22 56	27	840	53	480	61	.7338	80	.979	2	881		354.5	149.2
4	15.77	33	8	19 9	228	892	53	418	62	.7418	80	.981	2	908		7.7	162.3
5	15.84	30	9	15 21	29	943	51	356	62	.7495	77	.983	4	936	.0049	20.9	175.3
6	15.91	21	8	11 32	29	1.65994	51	294	62	.7569	74	.987	6	963		34.1	188.4
7	15.97	13	8	7 43	30	1.66045	51	232	62	.7641	72	6.993	10	2.5990		47.2	201.5
8	16.04	12 4 5	8	3 53	31	095	50	169	63	.7711	70	7.003	11	2.6018		60.4	214.5
9	16.10	12 3 56	9	21 0 2	231	144	49	106	63	.7779	68	.014	13	045		73.6	227.6
10	16.17	48	8	20 56 11	32	193	49	1.29043	63	.7845	66	.027	13	072	.0050	86.8	240.7
11	16.23	40	8	52 19	33	241	48	1.28981	62	.7908	63	.040	13	100		99.9	253.7
12	16.30	32	8	48 26	31	289	48	918	63	.7970	62	.053	11	127		113.1	266.8
13	16.37	24	8	44 32	35	336	47	855	63	.8030	60	.064	8	155		126.3	279.9
14	16.43	16	8	40 37	235	382	46	793	62	.8087	57	.072	6	182		139.5	292.9
15	16.50	8	8	36 42	35	428	46	731	62	.8142	55	.078	3	209	.0050	152.6	306.0
16	16.56	12 3 0	8	32 46	37	473	45	670	61	.8195	53	.081	3	237		165.8	319.1
17	16.63	12 2 52	8	28 49	38	518	45	609	61	.8247	52	.084	2	264		179.0	332.1
18	16.69	44	8	24 51	38	563	45	548	61	.8297	50	.086	2	291		192.2	345.2
19	16.76	36	8	20 53	239	607	44	488	60	.8345	48	.089	3	319		205.4	358.3
20	16.82	28	8	16 54	40	650	43	429	59	.8392	47	.095	6	346	.0051	218.5	11.3
21	16.89	20	7	12 54	41	693	43	371	58	.8437	45	.103	8	374		231.7	24.4
22	16.96	13	7	8 53	41	736	43	314	57	.8480	43	.113	10	401		244.9	37.5
23	17.02	12 2 6	7	4 52	212	778	42	257	57	.8521	41	.125	12	428		258.1	50.5
24	17.09	12 1 59	7	20 0 50	43	819	41	201	56	.8561	40	.138	13	456	.0051	271.2	63.6
25	17.15	52	7	19 56 47	44	860	41	146	55	.8599	38	.151	13	483		284.4	76.6
26	17.22	45	7	52 43	41	901	41	093	53	.8636	37	.162	11	510		297.6	89.7
27	17.28	38	7	48 39	215	941	40	1.28041	52	.8671	35	.171	9	538		310.8	102.8
28	17.35	32	6	44 34	43	1.66981	40	1.27991	50	.8705	34	.176	5	565	.0052	323.9	115.8
29	17.42	25	7	40 28	45	1.67020	39	941	50	.8737	32	.180	4	593		337.1	128.9
30	17.48	19	6	36 22	45	059	39	893	48	.8763	31	.182	2	620		350.3	142.0
31	17.55	12 1 13	6	19 32 15	47	1.67097	38	1.27846	47	n0.8798	30	−7.181	1	−2 6647	.0052	3.5	155.0
			6		218		38		45		28						

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1852.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_\zeta f$		*t.*	*p.*	☾	☾−Γ
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
Sept. 1	17.61	12 1 7	6	19 28 7	248	1.67135	38	1.27801	43	n0.8826	25	−7.181	1	−2.6675	.0052	16.7	168.1
2	17.68	12 1 1	6	23 59	49	173	37	758	41	.8851	25	.182	4	702		29.8	181.2
3	17.74	12 0 55	6	19 50	49	210	37	717	39	.8876	24	.186	6	730		43.0	194.2
4	17.81	49	6	15 41	50	247	37	678	38	.8900	23	.192	8	757		56.2	207.3
5	17.88	43	5	11 31	251	284	37	640	36	.8923	21	.200	10	784		69.4	220.4
6	17.94	38	5	7 20	51	321	36	604	35	.8944	20	.210	12	812	.0052	82.5	233.4
7	18.01	33	6	19 3 9	52	357	36	569	33	.8964	19	.222	11	839		95.7	246.5
8	18.07	27	5	18 58 57	52	393	36	536	33	.8983	17	.233	9	866		108.9	259.6
9	18.14	22	5	54 45	52	429	36	506	30	.9000	16	.242	8	894		122.1	272.6
10	18.20	17	5	50 33	52	464	35	477	29	.9016	14	.250	4	921		135.2	285.7
11	18.27	13	4	46 20	253	500	36	451	26	.9030	13	.254	3	949	.0053	148.4	298.8
12	18.34	9	4	42 6	54	535	35	428	23	.9043	12	.257	2	2.6976		161.6	311.8
13	18.40	4	5	37 52	54	569	34	407	21	.9055	11	.259	2	2.7003		174.8	324.9
14	18.47	12 0 0	4	33 38	54	604	35	387	20	.9066	9	.261	2	031		187.9	337.9
15	18.53	11 59 56	4	29 24	54	639	35	370	17	.9075	8	.263	3	058		201.1	351.0
16	18.60	53	3	25 9	255	673	34	355	15	.9083	7	.266	5	085	.0053	214.3	4.1
17	18.66	50	3	20 54	55	708	35	342	13	.9090	6	.271	8	113		227.5	17.1
18	18.73	46	4	16 39	55	742	34	330	12	.9096	4	.279	11	140		240.7	30.2
19	18.80	43	3	12 23	56	776	34	322	8	.9100	3	.290	12	168		253.9	43.3
20	18.86	40	3	8 7	56	810	34	316	6	.9103	2	.302	11	195		267.0	56.3
21	18.93	38	2	18 3 51	256	844	34	312	4	.9105		.313	11	222	.0054	280.2	69.4
22	18.99	36	3	17 59 35	56	878	34	310	2	.9105	1	.324	9	250		293.4	82.5
23	19.06	33	2	55 18	57	912	34	312	2	.9104	2	.333	5	277		306.5	95.5
24	19.13	31	2	51 2	56	946	34	315	3	.9102	3	.338	3	304		319.7	108.6
25	19.19	29	2	46 45	57	1.67980	34	321	6	.9099	4	.341	2	332		332.9	121.7
26	19.26	27	1	42 28	257	1.68014	34	330	9	.9095	6	.343	2	359	.0054	346.1	134.7
27	19.32	26	2	38 11	57	048	34	342	12	.9089	7	.341	1	387		359.2	147.8
28	19.39	24	1	33 54	57	082	34	355	13	.9082	9	.341		414		12.4	160.9
29	19.45	23	1	29 37	57	116	34	371	16	.9073	10	.342	2	441		25.6	173.9
30	19.52	22	1	25 20	57	150	34	389	18	.9063	11	.344	5	469		38.8	187.0
Oct. 1	19.59	21		21 4	236	185	35	410	21	.9052	12	.349	7	496	.0055	51.9	200.1
2	19.65	21		16 47	57	220	35	433	23	.9040	14	.356	10	523		65.1	213.1
3	19.72	21		12 31	56	254	34	458	25	.9026	15	.366	11	551		78.3	226.2
4	19.78	21		8 14	57	289	35	485	27	.9011	16	.377	11	578		91.5	239.2
5	19.85	21		17 3 58	56	325	36	515	30	.8995	16	.388	10	606		104.6	252.3
6	19.91	21		16 59 42	256	360	35	546	31	.8977	18	.398	8	633	.0055	117.8	265.4
7	19.98	21		55 27	55	396	36	580	34	.8958	19	.406	6	660		131.0	278.4
8	20.05	21		51 12	55	431	35	615	35	.8938	20	.412	3	688		144.2	291.5
9	20.11	22	1	46 57	55	467	36	652	37	.8916	22	.415	2	715		157.4	304.6
10	20.18	23	1	42 42	254	504	37	692	40	.8892	24	.417	1	743		170.5	317.6
11	20.24	24	1	38 28	54	541	37	733	41	.8866	26	.418	2	770	.0056	183.7	330.7
12	20.31	25	1	34 14	54	578	37	776	43	.8840	26	.420	3	797		196.9	343.8
13	20.37	26	1	30 0	53	615	37	821	45	.8812	28	.423	5	825		210.1	356.8
14	20.44	27	1	25 47	53	652	38	868	47	.8783	29	.428	5	852		223.2	9.9
15	20.51	28	1	21 34	253	690	38	916	48	.8752	31	.437	9	879		236.4	23.0
16	20.57	30	2	17 21	52	729	39	1.27967	51	.8720	32	.448	11	907	.0057	249.6	36.0
17	20.64	32	2	13 9	52	768	39	1.28019	52	.8686	34	.461	13	934		262.8	49.1
18	20.70	33	1	8 57	51	807	40	072	53	.8651	35	.474	13	962		275.9	62.2
19	20.77	35	2	4 46	250	847	40	127	55	.8614	37	.487	13	2.7989		289.1	75.2
20	20.83	37	2	16 0 36	50	887	41	183	56	.8575	39	.497	10	2.8016	.0057	302.3	88.3
21	20.90	39	3	15 56 26	50	928	41	240	57	.8534	41	.505	8	044		315.5	101.4
22	20.97	42	2	52 16	49	1.68969	41	298	58	.8492	42	.511	6	071		328.6	114.4
23	21.03	44	2	48 7	49	1.69010	41	357	59	.8447	45	.513	2	098		341.8	127.5
24	21.10	46	3	43 58	218	052	42	417	60	.8401	46	.515	2	126	.0057	355.0	140.5
25	21.16	49	3	39 50	47	094	42	478	61	.8353	48	.515		153		8.2	153.6
26	21.23	52	3	35 43	47	137	43	539	61	.8303	50	.518	3	181		21.4	166.7
27	21.39	55	3	31 36	216	180	43	602	63	.8252	51	.521	3	208		34.5	179.7
28	21.36	11 59 58	3	27 30	46	223	44	666	64	.8199	53	.528	7	235	.0058	47.7	193.8
29	21.43	12 0 1	3	23 24	45	267	45	730	64	.8143	56	.537	9	263		60.9	205.9
30	21.49	4	3	19 19	45	312	45	794	64	.8085	58	.548	11	290		74.1	219.9
31	21.56	12 0 7	2	15 15 15	41	1.69357	46	1.28859	65	n0.8025	60	−7.561	13	−2.8317	.0059	87.2	232.0
					211				65		62						

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1852.	Sid. time Wash.	G.		H.		$\log g$.		$\log h$.		$\frac{\log i.}{i}$		$f + \Delta_{\mathfrak{C}} f$		t.	p.	$\mathfrak{C}$	$\mathfrak{C} - \Gamma$
	h.	h. m.	s.	h. m.	s.							s.		years.		°	°
Nov. 1	21.62	12 0	9	15 11	11	1.69403	46	1.28924	65	n0.7963	64	−7.574	12	−2.8345	.0059	100.4	245.1
2	21.69		12		7	449	47	1.28989	66	.7899	67	.586	11	372		113.6	258.1
3	21.76		15	15 3	4	496	47	1.29055	65	.7832	69	.597	8	400		126.8	271.2
4	21.82		18	14 59	2	543	48	120	66	.7763	71	.605	6	427		139.9	284.3
5	21.89		21		55 1	591	48	186	66	.7692	75	.611	5	454		153.1	297.3
6	21.95		24		51 0	639	49	252	65	.7617	77	.616	4	482	.0059	166.3	310.4
7	22.02		26		47 0	688	49	317	65	.7540	79	.620	4	509		179.5	323.5
8	22.08		29		43 1	737	50	382	65	.7461	82	.624	5	537		192.6	336.5
9	22.15		32		39 2	787	50	447	65	.7379	86	.629	8	564		205.8	349.6
10	22.22		35		35 4	837	51	512	64	.7293	88	.637	10	591		219.0	2.7
11	22.28		38		31 6	888	51	576	63	.7205	92	.647	12	619	.0060	232.2	15.7
12	22.35		41		27 9	939	52	639	63	.7113	96	.659	15	646		245.4	28.8
13	22.41		43		23 13	1.69991	52	702	62	.7017	99	.674	15	673		258.5	41.8
14	22.48		46		19 17	1.70043	53	764	62	.6918	102	.689	15	701		271.7	54.9
15	22.54		49		15 22	096	53	826	61	.6816	107	.704	13	728		284.9	68.0
16	22.61		52		11 27	149	53	887	60	.6709	111	.717	11	756	.0061	298.1	81.0
17	22.68		54		7 33	202	54	1.29947	59	.6598	114	.728	9	783		311.2	94.1
18	22.74		57	14 3	39	256	54	1.30006	57	.6484	120	.737	6	810		324.4	107.2
19	22.81	12 0	59	13 59	46	311	55	063	56	.6364	126	.743	5	838		337.6	120.2
20	22.87	12 1	2		55 53	366	55	119	56	.6238	130	.748	3	865		350.8	133.3
21	22.94		4		52 1	421	55	175	56	.6108	135	.751	5	892	.0061	3.9	146.4
22	23.00		6		48 9	477	56	230	55	.5973	141	.756	5	920		17.1	159.4
23	23.07		8		44 18	533	56	283	53	.5832	147	.761	7	947		30.3	172.5
24	23.13		10		40 27	589	56	335	52	.5685	154	.768	10	2.8975		43.5	185.6
25	23.20		12		36 37	646	57	385	50	.5531	160	.778	13	2.9002		56.6	198.6
26	23.27		14		32 47	704	58	433	48	.5371	168	.791	14	029	.0062	69.8	211.7
27	23.33		16		28 58	761	57	480	47	.5203	178	.805	15	057		83.0	224.8
28	23.40		17		25 9	819	58	526	46	.5025	185	.820	15	084		96.2	237.9
29	23.46		19		21 20	878	59	571	45	.4840	195	.835	14	112		109.4	250.9
30	23.53		20		17 32	937	59	613	42	.4645	206	.849	12	139		122.5	264.0
Dec. 1	23.60		21		13 44	1.70996	59	653	40	.4439	218	.861	10	166	.0062	135.7	277.0
2	23.66		22		9 56	1.71055	59	692	39	.4221	231	.871	8	194		148.9	290.1
3	23.73		23		6 9	114	59	730	38	.3990	244	.879	6	221		162.1	303.1
4	23.79		23	13 2	22	174	60	765	35	.3746	262	.885	6	248		175.2	316.2
5	23.86		24	12 58	35	234	60	798	33	.3484	279	.891	7	276		188.4	329.3
6	23.92		24		54 49	294	60	830	32	.3205	302	.898	9	303	.0063	201.6	342.3
7	23.99		23		51 3	354	60	860	30	.2903	323	.907	11	331		214.8	355.4
8	0.05		23		47 17	414	60	887	27	.2580	352	.918	14	358		227.9	8.5
9	0.12		23		43 32	475	61	913	26	.2228	386	.932	16	385		241.1	21.5
10	0.19		23		39 47	536	61	936	23	n0.1842	427	.948	17	413		254.3	34.6
11	0.25		23		36 2	597	61	958	22	−1.385	142	.965	17	440	.0064	267.5	47.7
12	0.32		22		32 17	658	61	978	20	.243	143	.982	16	467		280.6	60.7
13	0.38		21		28 32	719	61	1.30985	17	1.100	143	7.998	14	495		293.8	73.8
14	0.45		20		24 48	780	61	1.31011	16	0.957	144	8.012	12	522		307.0	86.9
15	0.51		19		21 3	841	61	024	13	.813	144	.024	10	550		320.2	99.9
16	0.58		17		17 19	903	62	036	12	.669	144	.034	6	577	.0064	333.3	113.0
17	0.65		15		13 35	1.71964	61	045	9	.525	144	.040	5	604		346.5	126.1
18	0.71		14		9 50	1.72025	61	052	7	.380	145	.045	5	632		359.7	139.1
19	0.78		12		6 6	086	61	057	5	.236	144	.050	5	659		12.9	152.2
20	0.84		9	12 2	21	147	61	059	2	−0.091	145	.056	6	686	.0065	26.0	165.3
21	0.91		7	11 58	37	209	62	060	1	+0.054	145	.064	8	714		39.2	178.3
22	0.97		5		54 53	270	61	058	2	.199	145	.075	11	741		52.4	191.4
23	1.04	12 1	2		51 8	330	60	054	4	.343	144	.088	13	769		65.6	204.4
24	1.11	12 0	59		47 24	391	61	048	6	.487	144	.103	15	796	.0065	78.8	217.5
25	1.17		56		43 39	452	61	039	9	.632	145	.120	17	823		91.9	230.6
26	1.24		53		39 54	513	61	027	12	.776	144	.136	16	851		105.1	243.6
27	1.30		50		36 9	573	60	014	13	0.920	144	.151	15	878		118.3	256.7
28	1.37		47		32 24	633	60	1.31000	14	1.064	144	.164	13	905	.0066	131.5	269.8
29	1.43		43		28 39	693	60	1.30983	17	.207	143	.175	11	933		144.6	282.8
30	1.50		39		24 54	752	59	963	20	.350	143	.184	9	960		157.8	295.9
31	1.56	12 0	35	11 21	9	1.72812	59	1.30943	20	+1.493	143	−8.191	7	−2.9988	.0066	171.0	309.0
									23		142		6				

[illegible] THE APPARENT PLACES OF FIXED STARS TO 1850.0.

[illegible]

1851.	τ	ψ	H.	log a.	log b.	log i.	f − 1.f	t.	p.	☾	☾ − Γ
		h m s	h m s					years.		°	°
[illegible] 1	[illegible]	12 0 [illegible]	11 [illegible]	1.72[illegible]	1.30[illegible]	0.[illegible]	−8.[illegible]	−3.0[illegible]15	.0066	184.2	322.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]42		197.4	335.1
[illegible]	[illegible]	[illegible]	[illegible]	1.72[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		210.5	348.2
[illegible]	[illegible]	[illegible]	[illegible]	1.72[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		223.7	1.2
[illegible]	[illegible]	[illegible]	11 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1[illegible]		236.9	14.3
[illegible]	[illegible]	[illegible]	10 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	15[illegible]	.0066	250.1	27.4
[illegible]	[illegible]	12 0 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		263.2	40.4
[illegible]	[illegible]	11 59 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		276.4	53.5
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]34		289.6	66.6
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.[illegible]14	261		302.8	79.6
[illegible]	[illegible]	[illegible]	[illegible]	445	[illegible]	[illegible]	[illegible]	[illegible]9	.0067	315.9	92.7
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	316		329.1	105.7
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	343		342.3	118.8
[illegible]	[illegible]	24	[illegible]	[illegible]	444	[illegible]	.347	371		355.5	131.9
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.351	398		8.6	144.9
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	344	[illegible]	.355	426	.0067	21.8	158.0
[illegible]	[illegible]	6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	453		35.0	171.1
[illegible]	[illegible]	11 59 [illegible]	[illegible]	[illegible]21	[illegible]	[illegible]	.370	481		48.2	184.1
[illegible]	[illegible]	11 58 34	[illegible]	[illegible]73	[illegible]	[illegible]	.381	508		61.3	197.2
[illegible]	[illegible]	[illegible]	4 45	[illegible]	[illegible]	.[illegible]17	.394	535		74.5	210.3
[illegible]	[illegible]	41	10 [illegible] 21	1.73[illegible]77	[illegible]72	.6343	.4[illegible]	563	.0068	87.7	223.3
[illegible]	[illegible]	35	9 [illegible] 57	1.74[illegible]	1.30[illegible]14	.6464	.422	590		100.9	236.4
[illegible]	[illegible]	28	53 2	[illegible]79	1.29[illegible]35	.6[illegible]	.436	617		114.0	249.5
[illegible]	[illegible]	21	49 6	12[illegible]	[illegible]	.6691	.449	645		127.2	262.5
[illegible]	3.21	15	45 10	177	8[illegible]4	.6[illegible]	.458	672		140.4	275.6
[illegible]	3.27	8	41 13	[illegible]	772	.69[illegible]4	.466	700	.0069	153.6	288.7
[illegible]	3.[illegible]	11 58 2	37 15	273	7[illegible]9	.7004	.471	727		166.8	301.7
[illegible]	3.4[illegible]	11 57 55	33 17	321	646	.7101	.475	754		179.9	314.8
[illegible]	3.47	48	29 18	[illegible]	582	.7194	.480	782		193.1	327.9
[illegible]	3.54	41	25 18	414	518	.7283	.486	809		206.3	340.9
31	3.60	34	21 18	460	453	.7370	.493	836	.0069	219.5	354.0
Feb. 1	3.67	28	17 17	[illegible]	387	.7454	.503	864		232.6	7.0
2	3.73	21	13 15	[illegible]	321	.7534	.515	891		245.8	20.1
3	3.8[illegible]	14	9 13	[illegible]	255	.7612	.530	919		259.0	33.2
4	3.86	7	5 10	639	189	.7687	.545	946		272.2	46.2
5	3.93	11 57 0	9 1 7	[illegible]3	123	.7760	.559	3.0973	.0070	285.3	59.3
6	4.00	11 56 53	8 57 3	726	1.29057	.7830	.571	3.1001		298.5	72.4
7	4.06	46	52 58	768	1.28991	.7897	.582	028		311.7	85.4
8	4.13	40	48 53	809	925	.7962	.590	055		324.9	98.5
9	4.19	33	44 47	850	859	.8025	.595	083		338.1	111.6
10	4.26	27	40 40	891	793	.8086	.597	110	.0071	351.2	124.6
11	4.32	20	36 32	931	728	.8144	.597	138		4.4	137.7
12	4.39	14	32 24	1.74971	664	.8200	.600	165		17.6	150.8
13	4.46	7	28 15	1.75011	600	.8254	.603	192		30.8	163.8
14	4.52	11 56 1	24 6	050	537	.8306	.609	220		43.9	176.9
15	4.59	11 55 55	19 56	088	474	.8356	.617	247	.0071	57.1	190.0
16	4.65	49	15 46	126	413	.8404	.628	275		70.3	203.0
17	4.72	43	11 35	163	353	.8450	.638	302		83.5	216.1
18	4.78	37	7 23	200	293	.8495	.650	329		96.6	229.2
19	4.85	31	8 3 11	236	234	.8538	.662	357		109.8	242.2
20	4.92	25	7 58 58	272	176	.8578	.672	384	.0072	123.0	255.3
21	4.98	19	54 45	308	120	.8617	.680	411		136.2	268.3
22	5.05	13	50 31	343	065	.8654	.686	439		149.3	281.4
23	5.11	8	46 17	378	1.28012	.8690	.689	466		162.5	294.5
24	5.18	11 55 3	42 2	412	1.27960	.8724	.691	494		175.7	307.5
25	5.24	11 54 58	37 47	446	910	.8757	.693	521	.0072	188.9	320.6
26	5.31	53	33 31	480	861	.8788	.696	548		202.1	333.7
27	5.38	48	29 15	513	814	.8818	.700	576		215.2	346.7
28	5.44	11 54 43	7 24 59	1.75545	1.27769	0.8846	−8.707	−3.1603	.0073	228.4	359.8

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1860.0.

Epoch 6h. 52m. mean time, Washington.

1853.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f+\Delta_{\mathfrak{C}} f$		*t.*		*p.*	$\mathfrak{C}$	$\mathfrak{C}-\Gamma'$
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*			°	°
Mar. 1	5.51	11 54 38	4	7 20 42	257	1.75577	32	1.27726	41	0.8872	25	−8.716	11	−3.1630	.0073		241.6	12·8
2	5.57	34	5	16 25	58	609	32	685	40	.8897	23	.727	13	658			254.8	25.9
3	5.64	29	4	12 7	58	641	33	645	38	.8920	22	.740	13	685			267.9	39.0
4	5.70	25	4	7 49	58	673	33	607	38	.8942	21	.753	13	713			281.1	52.1
5	5.77	21	4	7 3 31	58	704	31	571	36	.8963	21	.764	11	740	.0074		294.3	65.1
6	5.84	17	4	6 59 12	59	735	31	538	33	.8982	19	.773	9	767			307.5	78.2
7	5.90	13	4	54 53	59	766	31	507	31	.9000	18	.778	5	795			320.6	91.3
8	5.97	9	4	50 34	60	797	31	478	29	.9016	16	.782	4	822			333.8	104.3
9	6.03	5	4	46 14	60	827	30	451	27	.9031	15	.784	2	849			347.0	117.4
10	6.10	11 54 2	3	41 55	59	857	30	426	25	.9045	14	.784		877	.0074		0.2	130.5
11	6.16	11 53 59	3	37 35	260	887	30	403	23	.9057	12	.784		904			13.3	143.5
12	6.23	56	3	33 15	60	917	30	383	20	.9068	11	.785	1	932			26.5	156.6
13	6.30	53	3	28 55	60	946	29	366	17	.9077	9	.787	2	957			39.7	169.6
14	6.36	50	3	24 35	60	1.75975	29	351	15	.9085	8	.793	6	3.1986			52.9	182.7
15	6.43	47	3	20 15	60	1.76005	30	338	13	.9092	7	.801	8	3.2014	.0075		66.0	195.8
16	6.49	45	2	15 55	260	034	29	328	10	.9097	5	.811	10	041			79.2	208.8
17	6.56	43	2	11 35	60	063	29	320	8	.9101	4	.821	10	068			92.4	221.9
18	6.63	41	2	7 15	60	092	29	315	5	.9104	3	.831	10	096			105.6	235.0
19	6.69	39	2	6 2 56	59	121	29	312	3	.9106	2	.841	10	123			118.7	248.0
20	6.76	37	2	5 58 36	60	150	29	312		.9106		.848	7	151	.0076		131.9	261.1
21	6.82	35	2	54 17	259	179	29	314	2	.9105	1	.854	6	178			145.1	274.2
22	6.89	34	1	49 58	59	208	29	318	4	.9102	3	.857	3	205			158.3	287.2
23	6.95	32	2	45 39	59	237	29	325	7	.9099	3	.858	1	233			171.5	300.3
24	7.02	31	1	41 21	58	266	29	335	10	.9094	5	.859	1	260			184.6	313.4
25	7.08	30	1	37 3	58	295	29	347	12	.9087	7	.861	2	287	.0076		197.8	326.4
26	7.15	29	1	32 45	258	324	29	361	14	.9080	7	.864	3	315			211.0	339.5
27	7.22	28	1	28 27	58	353	29	377	16	.9071	9	.868	4	342			224.2	352.6
28	7.28	27	1	24 10	57	382	29	396	19	.9061	10	.876	8	370			237.3	5.6
29	7.35	27		19 53	57	412	30	417	21	.9049	12	.886	10	397			250.5	18.7
30	7.41	26	1	15 36	57	442	30	440	23	.9036	13	.898	12	424	.0077		263.7	31.8
31	7.48	26	1	11 20	255	472	30	465	25	.9022	14	.912	14	452			276.9	44.8
Apr. 1	7.54	27		7 4	55	501	29	493	28	.9007	15	.923	11	479			290.0	57.9
2	7.61	27		5 2 49	55	531	30	523	30	.8990	17	.933	10	507			303.2	70.9
3	7.68	28	1	4 58 34	55	561	30	555	32	.8972	18	.941	8	534			316.4	84.0
4	7.74	28		54 20	54	592	31	589	34	.8952	20	.945	4	561			329.6	97.1
5	7.81	29	1	50 6	254	622	30	625	36	.8931	21	.948	3	589	.0078		342.8	110.1
6	7.87	29		45 52	54	653	31	663	38	.8909	22	.948		616			355.9	123.2
7	7.94	30	1	41 39	53	684	31	703	40	.8886	23	.948		643			9.1	136.3
8	8.00	31	1	37 27	52	715	31	745	42	.8861	25	.949	1	671			22.3	149.3
9	8.07	32	1	33 16	51	746	31	488	43	.8834	27	.952	3	698			35.5	162.4
10	8.14	33	1	29 5	251	777	31	833	45	.8806	28	.957	5	726	.0078		48.6	175.5
11	8.20	34	1	24 55	50	809	32	880	47	.8777	29	.964	7	753			61.8	188.5
12	8.27	35	1	20 46	49	841	32	928	48	.8747	30	.975	11	780			75.0	201.6
13	8.33	37	1	16 37	49	874	33	1.27977	49	.8715	32	.986	11	808			88.2	214.7
14	8.40	39	2	12 29	48	907	33	1.28028	51	.8681	34	8.998	12	835			101.3	227.7
15	8.46	41	2	8 22	247	940	33	081	53	.8646	35	9.008	10	862	.0079		114.5	240.8
16	8.53	43	2	4 15	47	1.76973	33	134	53	.8609	37	.017	9	890			127.7	253.9
17	8.60	45	2	4 0 9	46	1.77006	34	188	54	.8570	39	.024	7	917			140.9	266.9
18	8.66	47	2	3 56 4	45	040	34	243	55	.8530	40	.029	5	945			154.0	280.0
19	8.73	49	2	52 0	244	074	34	299	56	.8489	41	.033	4	972			167.2	293.1
20	8.79	51	2	47 57	43	108	35	357	58	.8446	43	.035	2	3.2999	.0080		180.4	306.1
21	8.86	53		43 55	42	143	35	416	59	.8401	45	.037	2	3.3027			193.6	319.2
22	8.92	55	2	39 54	41	178	35	475	59	.8354	47	.041	4	054			206.8	332.2
23	8.99	57	2	35 53	211	214	36	535	60	.8306	48	.047	6	082			219.9	345.3
24	9.06	11 53 59	2	31 53	40	250	36	596	61	.8256	50	.056	9	109			233.1	358.4
25	9.12	11 54 1	2	27 54	39	286	36	658	62	.8204	52	.067	11	136	.0080		246.3	11.4
26	9.19	4	3	23 55	39	323	37	721	63	.8150	54	.080	13	164			259.5	24.5
27	9.25	6	2	19 57	238	360	37	784	63	.8095	55	.094	14	191			272.6	37.6
28	9.32	9	3	16 0	37	397	37	847	63	.8037	58	.107	13	218			285.8	50.6
29	9.38	11	2	12 4	36	435	38	910	63	.7977	60	.120	13	246			299.0	63.7
30	9.45	11 54 14	3	3 8 9	35	1.77473	38	1.28973	63	0.7916	61	−9.130	10	−3.3273	.0081		312.2	76.8
			3		235		38		63		63		9					

[illegible] PLACES OF FIXED STARS TO 1850.0.

f − Δf	t.	p.	☾	☾ − Γ′
	years.		°	°
−9.[illegible]	−3.331	.0091	325.3	89.8
	[illegible]		338.5	102.9
	[illegible]		351.7	116.0
	[illegible]		4.9	129.0
	[illegible]		18.0	142.1
	[illegible]	.0092	31.2	155.2
	[illegible]		44.4	168.2
	[illegible]		57.6	181.3
	[illegible]		70.7	194.4
	[illegible]		83.9	207.4
	[illegible]	.0092	97.1	220.5
	[illegible]		110.3	233.5
	[illegible]		123.5	246.6
	[illegible]		136.6	259.7
	[illegible]		149.8	272.7
	[illegible]	.0093	163.0	285.8
	[illegible]		176.2	298.9
	[illegible]		189.3	311.9
	[illegible]		202.5	325.0
	[illegible]		215.7	338.1
	[illegible]	.0094	228.9	351.1
	[illegible]		242.0	4.2
	[illegible]		255.2	17.3
	[illegible]		268.4	30.3
	[illegible]		281.6	43.4
	33[illegible]	.0094	294.7	56.5
	34[illegible]		307.9	69.5
	[illegible]		321.1	82.6
	[illegible]		334.3	95.7
	[illegible]		347.5	108.7
	[illegible]	.0095	0.6	121.8
	[illegible]		13.8	134.8
	[illegible]		27.0	147.9
	[illegible]		40.2	161.0
	[illegible]		53.3	174.0
	[illegible]	[illegible]	66.5	187.1
	[illegible]		79.7	200.2
	[illegible]		92.9	213.2
	[illegible]		106.0	226.3
	[illegible]		119.2	239.4
	[illegible]	[illegible]	132.4	252.4
	[illegible]		145.6	265.5
	[illegible]		158.7	278.6
	[illegible]		171.9	291.6
	[illegible]		185.1	304.7
	[illegible]	[illegible]	198.3	317.8
	[illegible]		211.5	330.8
	[illegible]		224.6	343.9
	[illegible]		237.8	357.0
	[illegible]	[illegible]	251.0	10.0
	[illegible]		264.2	23.1
	[illegible]		277.3	36.1
	[illegible]		290.5	49.2
	[illegible]	[illegible]	303.7	62.3
	[illegible]		316.9	75.3
	[illegible]		[illegible]	88.4
	[illegible]		[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	114.5
	[illegible]		[illegible]	127.6
	[illegible]		[illegible]	140.7
	−3.4[illegible]	[illegible]	[illegible]	153.7

TABLE 1—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0

Epoch 6h. 52m. mean time, Washington.

1853.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_2 f$		*t.*	*p.*	ℭ	ℭ − I′
	h.	h. m. s.		h. m. s.								s.		years.		°	°
July 1	13.52	11 54 55	3	23 23 23	211	1.80363	49	1.30356	20	n0.1485	393	−9.731	12	−3.4971	.0059	49.1	166.8
2	13.59	52	3	19 52	11	412	49	936	22	.1878	360	.743	14	3.4998		62.3	179.9
3	13.66	49	3	16 21	11	461	48	914	24	.2238	329	.757	16	3.5025		75.5	192.9
4	13.72	46	3	12 50	12	509	48	890	26	.2567	307	.773	15	053		88.6	206.0
5	13.79	43	3	9 18	212	557	48	864	28	.2874	284	.788	15	080		101.8	219.1
6	13.85	40	3	5 46	12	605	48	836	30	.3158	266	.803	15	108	.0090	115.0	232.1
7	13.92	37	3	23 2 14	13	653	47	806	31	.3424	250	.816	10	135		128.2	245.2
8	13.98	34	4	22 58 41	13	700	47	775	32	.3674	233	.826	9	162		141.3	258.3
9	14.05	30	4	55 8	13	747	47	743	34	.3907	223	.835	5	190		154.5	271.3
10	14.12	26	4	51 35	214	794	47	709	36	.4130	209	.840	6	217		167.7	284.4
11	14.18	22	4	48 1	14	841	46	673	37	.4339	200	.846	5	244	.0090	180.9	297.4
12	14.25	18	4	44 27	14	887	46	636	39	.4539	189	.851	7	272		194.0	310.5
13	14.31	14	4	40 53	15	933	46	597	41	.4728	181	.858	9	299		207.2	323.6
14	14.38	10	4	37 18	15	1.80979	45	556	42	.4909	171	.867	12	327		220.4	336.6
15	14.44	6	4	33 43	216	1.81024	45	514	43	.5080	163	.879	14	354		233.6	349.7
16	14.51	11 54 2	4	30 7	16	069	45	471	45	.5243	158	.893	16	381	.0091	246.7	2.8
17	14.58	11 53 58	4	26 31	16	114	45	426	46	.5401	150	.909	16	409		259.9	15.8
18	14.64	54	5	22 55	17	159	45	380	48	.5551	144	.925	16	436		273.1	28.9
19	14.71	49	5	19 18	18	204	44	332	49	.5695	138	.941	15	463		286.3	42.0
20	14.77	44	4	15 40	218	248	44	283	50	.5833	133	.956	12	491		299.5	55.0
21	14.84	40	5	12 2	19	292	43	233	51	.5966	128	.968	9	518	.0092	312.6	68.1
22	14.90	35	5	8 23	19	335	43	182	52	.6094	123	.977	6	546		325.8	81.1
23	14.97	30	5	4 44	20	378	43	130	54	.6217	119	.983	5	573		339.0	94.2
24	15.04	25	5	22 1 4	20	421	43	076	55	.6336	114	.988	4	600		352.2	107.3
25	15.10	20	5	21 57 24	221	463	42	1.30021	56	.6450	110	.992	4	628		5.3	120.4
26	15.17	15	5	53 43	22	504	41	1.29965	56	.6560	106	9.996	4	655	.0092	18.5	133.4
27	15.23	10	5	50 1	22	546	42	909	57	.6666	103	10.000	8	683		31.7	146.5
28	15.30	5	5	46 19	23	587	41	852	58	.6769	99	.008	10	710		44.9	159.6
29	15.36	11 53 0	5	42 36	23	628	41	794	59	.6868	95	.018	11	737		58.0	172.6
30	15.43	11 52 55	5	38 53	224	668	40	735	60	.6963	92	.029	14	765		71.2	185.7
31	15.49	50	5	35 9	25	708	40	675	60	.7055	89	.043	14	792	.0093	84.4	198.7
Aug. 1	15.56	45	5	31 24	26	748	40	615	61	.7144	87	.057	13	819		97.6	211.8
2	15.63	40	5	27 38	26	787	39	554	61	.7231	84	.070	12	847		110.7	224.9
3	15.69	35	5	23 52	27	826	39	493	61	.7315	81	.082	8	874		123.9	237.9
4	15.76	30	6	20 5	228	864	38	432	62	.7396	78	.090	7	902		137.1	251.0
5	15.82	24	5	16 17	29	902	38	370	62	.7474	76	.097	6	929	.0094	150.3	264.1
6	15.89	19	5	12 28	29	940	38	308	62	.7550	73	.103	3	956		163.4	277.1
7	15.95	14	5	8 39	30	1.81977	37	246	62	.7623	71	.106	3	3.5984		176.6	290.2
8	16.02	9	5	4 49	31	1.82014	37	184	63	.7694	68	.109	4	3.6011		189.8	303.3
9	16.09	11 52 4	5	21 0 58	231	051	37	121	63	.7762	66	.113	6	038		203.0	316.3
10	16.15	11 51 59	5	20 57 7	32	087	36	1.29058	62	.7828	64	.119	8	066	.0095	216.2	329.4
11	16.22	51	5	53 15	33	123	36	1.28996	63	.7892	62	.127	12	093		229.3	342.5
12	16.28	49	5	49 22	34	158	35	933	63	.7954	60	.139	14	121		242.5	355.5
13	16.35	44	5	45 28	34	193	35	870	62	.8014	58	.153	14	148		255.7	8.6
14	16.41	39	5	41 34	235	227	34	808	62	.8072	56	.167	14	175		268.9	21.7
15	16.48	34	5	37 39	36	261	34	746	61	.8128	54	.181	13	203	.0095	282.0	34.7
16	16.55	29	5	33 43	37	295	34	685	61	.8182	52	.194	11	230		295.2	47.8
17	16.61	24	5	29 46	37	329	33	624	61	.8234	50	.205	8	257		308.4	60.9
18	16.68	19	5	25 49	38	362	33	563	60	.8284	49	.213	5	285		321.6	73.9
19	16.74	14	5	21 51	239	395	33	503	59	.8333	47	.218	3	312		334.7	87.0
20	16.81	9	5	17 52	40	427	32	444	58	.8380	45	.221	1	340	.0096	347.9	100.0
21	16.87	11 51 4	5	13 52	40	460	33	386	57	.8425	43	.222	1	367		1.1	113.1
22	16.94	11 50 59	5	9 52	41	492	32	329	57	.8468	42	.224	2	394		14.3	126.2
23	17.01	55	4	5 51	242	523	31	272	56	.8510	41	.227	3	422		27.5	139.2
24	17.07	51	5	20 1 49	43	554	31	216	55	.8551	39	.231	4	449	.0097	40.6	152.3
25	17.14	46	4	19 57 46	43	585	30	161	53	.8590	37	.237	6	477		53.8	165.4
26	17.20	42	4	53 43	44	615	30	108	52	.8627	35	.246	9	504		67.0	178.4
27	17.27	38	4	49 39	215	645	30	056	51	.8662	34	.257	11	531		80.2	191.5
28	17.33	34	4	45 34	45	675	30	1.28005	50	.8696	33	.269	12	559	.0098	93.3	204.6
29	17.40	30	4	41 29	46	704	29	1.27955	48	.8729	31	.280	11	586		106.5	217.6
30	17.47	26	4	37 23	47	733	29	907	47	.8760	30	.291	7	613		119.7	230.7
31	17.53	11 50 22	4	19 33 16	217	1.82762	29	1.27860	45	n0.8790	28	−10.298	6	−3.6641	.0098	132.9	243.8

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1860.0.

Epoch 6h 53m. mean time, Washington.

1853.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_\zeta f$		*t.*		*p.*	☾	☾—☿
	h	*h. m. s.*		*h. m. s.*										*s.*		*years.*		
Sept. 1	17.60	11 50 18	4	19 29 9	248	1.82791	29	1.27815	41	n0.8818	27	—10.304	3	—3.6668	.0095		146.0	256.8
2	17.66	14	3	25 1	49	820	28	771	42	.8845	26	.307	1	696			159.2	269.9
3	17.73	11	4	20 52	49	848	28	729	40	.8871	24	.308	2	723			172.4	283.0
4	17.79	7	1	16 43	50	876	28	689	38	.8895	23	.310	2	750			185.6	296.0
5	17.86	3	3	12 33	250	904	27	651	36	.8918	22	.312	4	778			198.7	309.1
6	17.93	11 50 0	3	8 23	51	931	27	615	35	.8940	20	.316	5	805	.0099		211.9	322.2
7	17.99	11 49 57	3	4 12	52	958	27	580	33	.8960	18	.321	9	832			225.1	335.2
8	18.06	54	3	19 0 0	52	1.82985	27	547	31	.8978	17	.330	11	860			238.3	348.3
9	18.12	51	3	18 55 48	52	1.83012	27	515	29	.8995	16	.341	12	887			251.5	1.3
10	18.19	48	3	51 35	253	038	26	486	29	.9011	16	.353	12	915			264.6	14.4
11	18.25	45	3	47 22	53	064	26	459	27	.9026	15	.365	12	942	.0099		277.8	27.5
12	18.32	43	2	43 9	54	090	26	435	24	.9040	14	.378	13	969			291.0	40.5
13	18.39	41	2	38 55	54	116	26	413	22	.9053	13	.388	10	996			304.2	53.6
14	18.45	38	3	34 41	55	142	26	393	20	.9064	11	.395	7	3.7024			317.3	66.7
15	18.52	36	2	30 26	255	168	26	375	18	.9074	10	.400	5	051			330.5	79.7
16	18.58	34	2	26 11	55	194	26	359	16	.9082	8	.402	2	079	.0100		343.7	92.8
17	18.65	32	2	21 56	55	220	26	345	14	.9089	7	.402		106			356.9	105.9
18	18.72	30	2	17 41	56	246	26	333	12	.9095	6	.402		134			10.0	118.9
19	18.78	28	2	13 25	56	272	26	324	9	.9100	5	.403	1	161			23.2	132.0
20	18.85	26	2	9 9	256	297	25	317	7	.9103	3	.405	2	188			36.4	145.1
21	18.91	25	1	4 53	57	323	26	313	4	.9105	2	.410	5	216	.0101		49.6	158.1
22	18.98	24	1	18 0 36	56	348	25	311	2	.9106	1	.417	7	243			62.7	171.2
23	19.04	23	1	17 56 20	57	373	25	312	1	.9106		.427	10	270			75.9	184.3
24	19.11	22	1	52 3	56	398	25	315	3	.9104	2	.437	10	298			89.1	197.3
25	19.18	21	1	47 47	257	424	26	320	5	.9101	3	.448	11	325			102.3	210.4
26	19.24	20	1	43 30	56	449	25	328	8	.9097	4	.458	10	353	.0101		115.4	223.5
27	19.31	19	1	39 14	57	474	25	340	12	.9091	6	.466	8	380			128.6	236.5
28	19.37	19		34 57	57	499	25	353	13	.9084	7	.471	5	407			141.8	249.6
29	19.44	19		30 40	56	525	26	368	15	.9076	8	.475	4	435			155.0	262.6
30	19.50	18		26 24	257	550	25	386	18	.9066	10	.476	1	462			168.1	275.7
Oct. 1	19.57	18		22 7	57	576	26	406	20	.9055	11	.477	1	489	.0102		181.3	288.8
2	19.64	18		17 50	56	601	25	428	22	.9043	12	.479	2	517			194.5	301.8
3	19.70	18		13 34	56	627	26	453	25	.9030	13	.482	3	544			207.7	314.9
4	19.77	19		9 18	57	653	26	480	27	.9015	15	.487	5	572			220.9	328.0
5	19.83	19		5 1	256	679	26	509	29	.8999	16	.494	7	599			234.0	341.0
6	19.90	20		17 0 45	56	705	26	540	31	.8982	17	.504	10	626	.0103		247.2	354.9
7	19.96	20	1	16 56 29	55	731	26	573	33	.8963	19	.515	11	654			260.4	7.9
8	20.03	21	1	52 14	55	757	27	607	34	.8943	20	.529	14	681			273.6	20.2
9	20.10	22	1	47 59	55	784	27	644	37	.8921	22	.541	12	709			286.7	33.3
10	20.16	23	1	43 44	254	810	26	683	39	.8898	23	.553	12	736			299.9	46.4
11	20.23	24	1	39 30	54	837	27	724	41	.8873	25	.561	8	763	.0104		313.1	59.4
12	20.29	25	1	35 16	54	865	28	767	43	.8847	26	.567	6	791			326.3	72.5
13	20.36	26	1	31 2	54	892	27	811	44	.8820	27	.571	4	818			339.4	85.6
14	20.42	27	1	26 49	53	920	28	857	46	.8791	29	.573	2	845			352.6	98.6
15	20.49	28	1	22 36	53	948	28	905	48	.8761	30	.573		873			5.8	111.7
16	20.56	30	2	18 23	253	1.83976	28	1.27955	50	.8729	32	.575	2	900	.0105		19.0	124.8
17	20.62	32	2	14 11	52	1.84004	28	1.28006	51	.8695	34	.578	3	928			32.2	137.8
18	20.69	34	2	9 59	52	032	29	059	53	.8660	35	.583	5	955			45.3	150.9
19	20.75	36	2	5 48	51	061	29	113	54	.8623	37	.590	7	3.7982			58.5	163.9
20	20.82	38	2	16 1 37	51	090	29	168	55	.8585	38	.601	11	3 8010			71.7	177.0
21	20.88	40	2	15 57 27	250	119	29	225	57	.8545	40	.612	11	037	.0105		84.9	190.1
22	20.95	42	2	53 17	50	149	30	283	58	.8503	42	.624	12	064			98.0	203.1
23	21.02	44	2	49 8	49	179	30	342	59	.8459	44	.635	11	092			111.2	216.2
24	21.08	46	2	44 59	49	209	30	401	59	.8414	45	.645	10	119			124.4	229.3
25	21.15	48	2	40 51	248	240	31	461	60	.8367	47	.654	9	147			137.6	242.3
26	21.21	50	2	36 43	47	271	31	522	61	.8317	50	.660	6	174	.0106		150.7	255.4
27	21.28	53	3	32 36	46	303	32	585	63	.8266	51	.663	3	201			163.9	268.5
28	21.34	56	3	28 30	46	335	32	649	64	.8213	53	.665	2	229			177.1	281.5
29	21.41	11 49 58	2	24 24	46	367	32	713	64	.8158	55	.668	3	256			190.3	294.6
30	21.47	11 50 0	2	20 19	45	400	33	777	64	.8101	57	.672	4	284			203.4	307.7
31	21.54	11 50 2	2 3	15 16 14	244	1.84433	33 33	1.28842	65 65	n0.8042	59 62	—10.678	6 9	—3.8311	.0107		216.6	320.7

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1853.	Sid. time Wash.	G.	H.	*log g.*	*log h.*	$\frac{\log i.}{i}$	$f + \Delta_{\mathfrak{C}} f$	*t.*	*p.*	$\mathfrak{C}$	$\mathfrak{C} - \Gamma$
	h.	*h. m. s.*	*h. m. s.*				*s.*	*years.*		°	°
Nov. 1	21.61	11 50 5	15 12 10	1.84466	1.28907	n0.7980	−10 687	−3.8338	.0107	229.8	333.8
2	21.67	8	8 7	500	1.28972	.7916	.698	366		243.0	346.9
3	21.74	10	4 4	534	1.29038	.7850	.712	393		256.1	359.9
4	21.80	13	15 0 2	568	103	.7781	.727	420		269.3	13.0
5	21.87	16	14 56 1	602	169	.7710	.742	448		282.5	26.1
6	21.93	19	52 0	637	234	.7637	.755	475	.0108	295.7	39.1
7	22.00	22	48 0	672	300	.7561	.767	503		308.9	52.2
8	22.07	25	44 0	708	366	.7482	.777	530		322.0	65.2
9	22.13	27	40 1	744	431	.7400	.784	557		335.2	78.3
10	22.20	30	36 3	781	496	.7316	.788	585		348.4	91.4
11	22.26	32	32 5	818	560	.7228	.791	612	.0109	1.6	104.5
12	22.33	35	28 8	855	623	.7136	.795	639		14.7	117.5
13	22.39	37	24 11	893	686	.7042	.799	667		27.9	130.6
14	22.46	40	20 15	931	748	.6944	.806	694		41.1	143.6
15	22.53	42	16 19	1.84969	810	.6842	.816	722		54.3	156.7
16	22.59	45	12 24	1.85007	871	.6736	.827	749	.0109	67.4	169.8
17	22.66	48	8 30	046	932	.6627	.841	776		70.6	182.8
18	22.72	50	4 36	085	1.29992	.6513	.855	804		93.8	195.9
19	22.79	53	14 0 43	125	1.30050	.6394	.870	831		107.0	209.0
20	22.85	55	13 56 50	165	107	.6271	.883	858		120.1	222.0
21	22.92	11 50 58	52 58	205	162	.6143	.894	886	.0110	133.3	235.1
22	22.99	11 51 0	49 6	245	217	.6009	.903	913		146.5	248.2
23	23.05	2	45 15	286	271	.5869	.910	941		159.7	261.2
24	23.12	4	41 24	327	323	.5724	.915	968		172.8	274.3
25	23.18	6	37 34	369	374	.5572	.921	3.8995		186.0	287.4
26	23.25	8	33 44	411	423	.5413	.927	3.9023	.0111	199.2	300.4
27	23.31	10	29 54	453	470	.5247	.934	050		212.4	313.5
28	23.38	12	26 5	495	516	.5072	.944	078		225.6	326.5
29	23.45	14	22 16	538	561	.4888	.957	105		238.7	339.6
30	23.51	16	18 28	581	604	.4696	.972	132		251.9	352.7
Dec. 1	23.58	17	14 40	624	645	.4493	10.989	160	.0112	265.1	5.7
2	23.64	18	10 52	667	684	.4278	11.008	187		278.3	18.8
3	23.71	19	7 5	711	721	.4050	.025	214		291.4	31.9
4	23.77	20	13 3 18	755	757	.3809	.039	242		304.6	44.9
5	23.84	21	12 59 31	799	790	.3551	.052	269		317.8	58.0
6	23.91	22	55 45	843	822	.3275	.061	297	.0112	331.0	71.1
7	23.97	23	51 59	887	852	.2980	.069	324		344.1	84.1
8	0.04	24	48 13	931	880	.2660	.075	351		357.3	97.2
9	0.10	24	44 28	1.85976	906	.2314	.080	379		10.5	110.3
10	0.17	25	40 43	1.86021	930	n0.1939	.087	406		23.7	123.3
11	0.23	25	36 58	065	952	−1.421	.095	433	.0113	36.9	136.4
12	0.30	26	33 13	110	972	.278	.106	461		50.0	149.5
13	0.37	26	29 28	155	1.30990	1.135	.118	488		63.2	162.5
14	0.43	26	25 44	200	1.31006	0.992	.133	516		76.4	175.6
15	0.50	26	21 59	245	020	.848	.149	543		89.6	188.7
16	0.56	25	18 15	291	032	.704	.166	570	.0114	102.7	201.7
17	0.63	25	14 30	336	041	.560	.181	598		115.9	214.8
18	0.69	24	10 46	381	049	.416	.195	625		129.1	227.8
19	0.76	24	7 1	427	054	.271	.206	652		142.3	240.9
20	0.83	23	12 3 17	473	057	−0.126	.215	680	.0115	155.4	254.0
21	0.89	22	11 59 32	518	058	+0.018	.221	707		168.6	267.0
22	0.96	21	55 48	563	057	.163	.227	735		181.8	280.1
23	1.02	20	52 3	608	054	.308	.233	762		195.0	293.2
24	1.09	19	48 19	653	048	.452	.241	789	.0116	208.1	306.2
25	1.15	18	44 34	698	040	.597	.252	817		221.3	319.3
26	1.22	16	40 50	743	030	.741	.264	844		234.5	332.4
27	1.29	14	37 5	788	018	0.885	.280	872		247.7	345.4
28	1.35	12	33 20	833	1.31004	1.029	.297	899	.0117	260.9	358.5
29	1.42	10	29 35	878	1.30987	.172	.315	926		274.0	11.6
30	1.48	8	25 49	923	968	.315	.333	954		287.2	24.6
31	1.55	11 51 6	11 22 4	1.86967	1.30948	+1.458	−11.349	−3.9981	.0117	300.4	37.7

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1854.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_1 f$		*t.*		*p.*	ℭ	ℭ−Γ
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*			°	°
Jan. 1	1.62	11 51 4.1	2.5	11 18 18	226	1.87012	45	1.30925	25	0.2041	370	−11.364	12	−4.0009	.0117		313.6	50.8
2	1.68	11 51 1.6	2.6	14 32	26	057	44	900	27	.2411	339	.376	9	036			326.7	63.8
3	1.75	11 50 59.0	2.6	10 46	27	101	44	873	29	.2750	313	.385	6	063			339.9	76.9
4	1.81	56.4	2.7	6 59	27	145	43	844	30	.3063	290	.391	5	090			353.1	89.9
5	1.88	53.7	2.8	11 3 12	227	188	43	814	32	.3353	271	.396	6	118			6.3	103.0
6	1.95	50.9	2.9	10 59 25	27	231	43	782	34	.3624	253	.402	7	145	.0117		19.4	116.1
7	2.01	48.0	3.0	55 38	28	274	43	748	37	.3877	236	.409	9	173			32.6	129.1
8	2.08	45.0	3.1	51 50	28	317	43	711	38	.4115	224	.418	12	200			45.8	142.2
9	2.14	41.9	3.2	48 2	29	360	42	673	40	.4339	212	.430	14	227			59.0	155.3
10	2.21	38.7	3.2	44 13	29	402	42	633	40	.4551	201	.444	14	255			72.1	168.3
11	2.27	35.5	3.4	40 24	29	444	42	591	44	.4752	191	.459	15	282	.0118		85.3	181.4
12	2.34	32.1	3.5	36 35	30	486	42	547	45	.4943	182	.475	16	310			98.5	194.5
13	2.40	28.6	3.6	32 45	30	528	41	502	47	.5125	173	.490	15	337			111.7	207.5
14	2.47	25.0	3.6	28 55	31	569	41	455	48	.5298	165	.503	13	364			124.8	220.6
15	2.54	21.4	3.7	25 4	231	610	40	407	50	.5463	157	.514	11	392			138.0	233.7
16	2.60	17.7	3.8	21 13	32	650	40	357	51	.5620	151	.523	9	419	.0119		151.2	246.7
17	2.67	13.9	3.9	17 21	32	690	40	306	53	.5771	144	.529	6	446			164.3	259.8
18	2.73	10.0	4.0	13 29	33	730	40	253	54	.5915	139	.534	5	474			177.5	272.9
19	2.80	6.0	4.0	9 36	33	770	39	199	55	.6054	133	.539	5	501			190.7	285.9
20	2.86	11 50 2.0	4.0	5 43	234	809	39	144	57	.6187	126	.544	5	529			203.9	299.0
21	2.93	11 49 58.0	4.1	10 1 49	34	848	39	087	58	.6313	123	.552	8	556	.0120		217.1	312.1
22	3.00	53.9	4.2	9 57 55	35	887	38	1.30029	59	.6436	118	.562	10	584			230.3	325.1
23	3.06	49.7	4.2	54 0	36	925	38	1.29970	59	.6554	113	.576	14	611			243.4	338.2
24	3.13	45.5	4.3	50 4	37	1.87963	37	911	61	.6667	109	.591	15	638			256.6	351.2
25	3.19	41.2	4.3	46 7	237	1.88000	37	850	62	.6776	104	.607	16	665			269.8	4.3
26	3.26	36.9	4.3	42 10	37	037	37	788	62	.6880	102	.624	17	693	.0120		283.0	17.4
27	3.32	32.6	4.3	38 13	38	074	37	726	63	.6982	98	.639	15	720			296.1	30.4
28	3.39	28.3	4.4	34 15	39	110	36	663	64	.7080	94	.652	13	748			309.3	43.5
29	3.46	23.9	4.4	30 16	39	146	36	599	64	.7174	91	.661	9	775			322.5	56.6
30	3.52	19.5	4.4	26 17	240	182	36	535	65	.7265	87	.668	7	802			335.7	69.6
31	3.59	15.1	4.4	22 17	41	217	35	470	65	.7352	84	.673	5	830	.0121		348.8	82.7
Feb. 1	3.65	10.7	4.4	18 16	41	252	35	405	66	.7436	82	.676	3	857			2.0	95.8
2	3.72	6.3	4.4	14 15	42	286	34	339	66	.7518	78	.680	4	884			15.2	108.8
3	3.78	11 49 1.9	4.4	10 13	43	320	34	273	66	.7596	76	.684	4	912			28.4	121.9
4	3.85	11 48 57.5	4.4	6 10	243	354	33	207	66	.7672	72	.691	7	939			41.6	135.0
5	3.92	53.1	4.4	9 2 7	44	387	33	141	66	.7744	71	.699	8	967	.0122		54.7	148.0
6	3.98	48.7	4.4	8 58 3	45	420	33	075	67	.7815	68	.711	12	4.0094			67.9	161.1
7	4.05	44.3	4.4	53 58	45	453	32	1.29008	66	.7883	66	.724	13	4.1021			81.1	174.2
8	4.11	40.0	4.3	49 53	46	485	32	1.28942	66	.7949	63	.736	12	049			94.3	187.3
9	4.18	35.7	4.3	45 47	246	517	32	876	66	.8012	63	.749	13	076			107.4	200.3
10	4.24	31.4	4.3	41 41	47	548	31	811	65	.8072	60	.760	11	104	.0123		120.6	213.4
11	4.31	27.1	4.3	37 34	48	579	31	746	65	.8131	59	.768	8	131			133.8	226.4
12	4.38	22.9	4.2	33 26	48	610	30	681	65	.8187	56	.776	8	158			147.0	239.5
13	4.44	18.7	4.2	29 18	249	640	30	617	64	.8242	55	.779	3	186			160.1	252.5
14	4.51	14.6	4.1	25 9	50	670	29	554	63	.8294	52	.782	3	213	.0124		173.3	265.6
15	4.57	10.5	4.1	20 59	50	699	29	491	63	.8344	50	.784	2	240			186.5	278.7
16	4.64	6.4	4.1	16 49	51	728	29	429	62	.8393	49	.787	3	268			199.7	291.7
17	4.70	11 48 2.4	4.0	12 38	252	757	29	368	61	.8440	47	.792	5	295			212.8	304.8
18	4.77	11 47 58.4	4.0	8 26	52	786	29	308	60	.8485	45	.800	8	323	.0125		226.0	317.9
19	4.84	54.5	3.9	4 14	53	814	28	249	59	.8527	42	.810	10	350			239.2	330.9
20	4.90	50.7	3.8	8 0 1	53	842	28	191	58	.8568	41	.822	12	377			252.4	344.0
21	4.97	46.9	3.8	7 55 48	254	870	28	134	57	.8608	40	.835	13	405			265.6	357.1
22	5.03	43.1	3.7	51 34	54	897	27	079	55	.8646	38	.848	13	432	.0126		278.7	10.1
23	5.10	39.4	3.7	47 20	55	924	27	1.28025	54	.8682	36	.861	13	459			291.9	23.2
24	5.16	35.7	3.6	43 5	55	951	26	1.27973	52	.8717	35	.872	11	487			305.1	36.3
25	5.23	32.1	3.5	38 50	256	1.88977	26	922	51	.8749	32	.880	8	514			318.3	49.3
26	5.30	28.6	3.4	34 34	56	1.89003	26	873	49	.8780	31	.886	6	542	.0126		331.4	62.4
27	5.36	25.2	3.3	30 18	57	029	26	825	48	.8810	30	.890	4	569			344.6	75.5
28	5.43	11 47 21.9	3.1	7 26 1	257	1.89055	25	1.27780	45	0.8838	28	−11.892	2	−4.1596	.0126		357.8	88.5
									44		26		0					

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1854.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		*log i.*		$f + \Delta_{\mathfrak{C}} f$		*t.*	*p.*	$\mathfrak{C}$	$\mathfrak{C} - \Upsilon$
	h.	*h. m. s.*		*h. m. s.*								*s.*		*years.*		°	°
Mar. 1	5.49	11 47 18.8	3.0	7 21 44	257	1.89080	25	1.27736	42	0.8864	26	−11.892	3	−4.1624	.0126	11.0	101.6
2	5.56	15.8	2.9	17 27	58	105	25	694	40	.8890	24	.895	3	651		24.1	114.7
3	5.62	12.9	2.7	13 9	58	130	25	654	38	.8914	22	.898	6	678		37.3	127.7
4	5.69	10.2	2.6	8 51	59	155	24	616	36	.8936	20	.904	8	706		50.5	140.8
5	5.76	7.6	2.4	4 32	258	179	24	580	34	.8956	20	.912	10	733		63.7	153.8
6	5.82	5.2	2.3	7 0 14	59	203	24	546	32	.8976	18	.922	11	761	.0127	76.8	166.9
7	5.89	2.9	2.2	6 55 55	59	227	24	514	30	.8994	16	.933	11	788		90.0	180.0
8	5.95	11 47 0.7	2.1	51 36	59	251	24	484	27	.9010	15	.944	10	815		103.2	193.0
9	6.02	11 46 58.6	2.0	47 17	59	275	24	457	25	.9025	14	.954	8	843		116.4	206.1
10	6.08	56.6	1.9	42 58	260	299	23	432	23	.9039	13	.962	5	870		129.5	219.2
11	6.15	54.7	1.9	38 38	59	322	23	409	20	.9052	11	.967	2	897	.0128	142.7	232.2
12	6.22	52.8	1.8	34 19	60	345	23	389	18	.9063	10	.969	3	925		155.9	245.3
13	6.28	51.0	1.7	29 59	60	368	23	371	16	.9073	9	.972		952		169.1	258.4
14	6.35	49.3	1.5	25 39	60	391	23	355	13	.9082	7	.972	1	4.1980		182.3	271.4
15	6.41	47.8	1.4	21 19	259	414	23	342	11	.9089	6	.973	2	4.2007		195.4	284.5
16	6.48	46.4	1.3	17 0	60	437	22	331	9	.9095	4	.975	6	034	.0129	208.6	297.6
17	6.55	45.1	1.2	12 40	60	459	23	322	6	.9099	4	.981	7	062		221.8	310.6
18	6.61	43.9	1.1	8 20	60	482	22	316	4	.9103	2	.988	10	089		235.0	323.7
19	6.68	42.8	1.0	6 4 0	59	504	23	312	1	.9105		11.998	13	117		248.1	336.8
20	6.74	41.8	.9	5 59 41	260	527	22	311	1	.9105		12.011	12	144		261.3	349.8
21	6.81	40.9	.9	55 21	59	549	23	312	5	.9105	2	.023	12	171	.0130	274.5	2.9
22	6.87	40.0	.8	51 2	59	572	22	317	6	.9103	3	.035	12	199		287.7	16.0
23	6.94	39.2	.6	46 43	59	594	23	323	9	.9100	4	.047	8	226		300.8	29.0
24	7.01	38.6	.4	42 24	59	617	22	332	11	.9096	6	.055	6	253		314.0	42.1
25	7.07	38.2	.2	38 5	258	639	23	343	13	.9090	7	.061	3	281		327.2	55.1
26	7.14	38.0		33 47	58	662	22	356	16	.9083	9	.064	1	308	.0131	340.4	68.2
27	7.20	38.0	.1	29 29	58	684	22	372	18	.9074	10	.065		336		353.5	81.3
28	7.27	37.9	.1	25 11	57	707	23	390	21	.9064	11	.065	1	363		6.7	94.3
29	7.33	38.0	.1	20 54	57	729	22	411	22	.9053	12	.066	3	390		19.9	107.4
30	7.40	38.1	.2	16 37	256	752	23	433	25	.9041	14	.069	5	418		33.1	120.5
31	7.47	38.3	.4	12 21	56	775	23	458	28	.9027	16	.074	6	445	.0132	46.3	133.5
Apr. 1	7.53	38.7	.5	8 5	56	798	23	486	30	.9011	17	.080	9	472		59.4	146.6
2	7.60	39.2	.6	5 3 49	55	821	23	516	31	.8994	18	.089	11	500		72.6	159.7
3	7.66	39.8	.7	4 59 34	54	844	23	547	33	.8976	19	.100	11	527		85.8	172.7
4	7.73	40.5	.8	55 20	254	867	23	580	35	.8957	20	.111	10	555		99.0	185.8
5	7.79	41.3	.8	51 6	53	890	24	615	38	.8937	22	.121	10	582	.0132	112.1	198.9
6	7.86	42.1	.9	46 53	53	914	23	653	39	.8915	23	.131	7	609		125.3	211.9
7	7.93	43.0	.9	42 40	52	937	24	692	41	.8892	25	.138	4	637		138.5	225.0
8	7.99	44.0	1.0	38 28	51	961	24	733	43	.8867	26	.142	2	664		151.7	238.1
9	8.06	45.2	1.2	34 17	251	1.89985	24	776	45	.8841	27	.144	2	691		164.8	251.1
10	8.12	46.5	1.3	30 6	50	1.90009	24	821	46	.8814	29	.146	1	719	.0133	178.0	264.2
11	8.19	47.8	1.3	25 56	49	034	25	867	48	.8785	30	.147	3	746		191.2	277.3
12	8.25	49.2	1.4	21 47	49	059	25	915	49	.8755	32	.150	5	774		204.4	290.3
13	8.32	50.7	1.5	17 38	48	084	25	1.27964	51	.8723	33	.155	7	801		217.5	303.4
14	8.38	52.3	1.6	13 30	247	109	25	1.28015	52	.8690	35	.162	10	828		230.7	316.4
15	8.45	53.9	1.6	9 23	47	134	25	067	53	.8655	37	.172	13	856	.0134	243.9	329.5
16	8.52	55.6	1.7	5 16	46	159	25	120	54	.8618	38	.185	13	883		257.1	342.6
17	8.58	57.4	1.8	4 1 10	45	185	26	174	55	.8580	39	.198	13	911		270.3	355.6
18	8.65	11 46 59.2	1.8	3 57 5	244	211	26	229	57	.8541	41	.211	13	938		283.4	8.7
19	8.71	11 47 1.1	1.9	53 1	43	237	26	286	57	.8500	43	.223	12	965	.0135	296.6	21.8
20	8.78	3.1	2.0	48 58	43	263	26	343	59	.8457	45	.234	11	4.2993		309.8	34.8
21	8.84	5.1	2.0	44 55	42	289	27	402	59	.8412	46	.243	9	4.3020		323.0	47.9
22	8.91	7.2	2.1	40 53	241	316	27	461	60	.8366	48	.249	6	047		336.1	61.0
23	8.98	9.3	2.1	36 52	41	343	27	521	60	.8318	50	.253	4	075	.0136	349.3	74.0
24	9.04	11.5	2.2	32 51	40	370	28	581	61	.8268	51	.255	2	102		2.5	87.1
25	9.11	13.7	2.2	28 51	39	398	28	642	62	.8217	53	.258	3	130		15.7	100.2
26	9.17	15.9	2.2	24 52	238	426	28	704	62	.8164	53	.261	3	157		28.8	113.2
27	9.24	18.2	2.3	20 54	38	454	28	766	63	.8109	55	.267	6	184	.0136	42.0	126.3
28	9.30	20.5	2.3	16 56	37	482	29	829	63	.8052	57	.275	8	212		55.2	139.4
29	9.37	22.8	2.3	12 59	36	511	29	892	64	.7993	59	.285	10	239		68.4	152.4
30	9.44	11 47 25.2	2.4	3 9 3	231	1.90540	29	1.28956	64	0.7932	61	−12.297	12	−4.3266	.0136	81.5	165.5
			2.4								64		13				

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1860.0.

Epoch 6h. 52m. mean time, Washington.

1854.	Sid. time Wash.	G.		H.		*log g.*		*log h.*		$\frac{\log i}{i}$		$f+\Delta_{\zeta} f$		*t.*	*p.*	☾	☾−I′
	h.	*h. m. s.*		*h. m. s.*										*years.*		°	°
May 1	9.50	11 47 27.6	2.4	3 5 9	234	1.90569	30	1.29020	63	0.7868	66	−12.310	14	−4.3294	.0136	94.7	178.6
2	9.57	30.0	2.4	3 1 15	33	599	30	083	64	.7802	67	.324	14	321		107.9	191.6
3	9.63	32.4	2.4	2 57 22	32	629	30	147	63	.7735	70	.338	11	348		121.1	204.7
4	9.70	34.8	2.4	53 30	31	659	30	210	63	.7665	72	.349	8	376		134.3	217.7
5	9.76	37.2	2.4	49 39	231	689	31	273	63	.7593	75	.357	7	404		147.4	230.8
6	9.83	39.7	2.5	45 48	30	720	31	336	63	.7518	78	.364	4	431	.0137	160.6	243.9
7	9.90	42.1	2.4	41 58	29	751	31	399	62	.7440	80	.368	3	458		173.8	256.9
8	9.96	44.5	2.4	38 9	29	782	31	461	62	.7360	82	.371	4	486		187.0	270.0
9	10.03	46.9	2.4	34 20	28	813	32	523	61	.7278	85	.375	5	513		200.1	283.1
10	10.09	49.3	2.4	30 32	227	845	32	584	60	.7193	89	.380	9	540		213.3	296.1
11	10.16	51.6	2.3	26 45	25	877	32	644	60	.7104	92	.389	10	566	.0138	226.5	309.2
12	10.22	53.9	2.3	22 59	25	909	33	704	60	.7012	94	.399	11	595		239.7	322.3
13	10.29	56.2	2.3	19 14	25	942	33	764	59	.6918	98	.410	13	622		252.8	335.3
14	10.36	11 47 58.5	2.3	15 29	24	1.90975	33	823	58	.6820	101	.423	15	650		266.0	348.4
15	10.42	11 48 0.8	2.3	11 45	224	1.91008	34	881	57	.6719	106	.438	16	677		279.2	1.5
16	10.49	3.1	2.2	8 1	23	042	34	938	56	.6613	109	.454	14	705	.0139	292.4	14.5
17	10.55	5.3	2.2	4 18	22	076	34	1.29994	55	.6504	113	.468	11	732		305.5	27.6
18	10.62	7.5	2.1	2 0 36	21	110	34	1.30049	54	.6391	117	.479	9	759		318.7	40.7
19	10.68	9.6	2.0	1 56 55	21	144	34	103	54	.6274	123	.488	6	787		331.9	53.7
20	10.75	11.6	2.0	53 14	220	178	35	157	52	.6151	127	.494	5	814		345.1	66.8
21	10.82	13.6	1.9	49 34	20	213	35	209	51	.6024	132	.499	4	841	.0140	358.3	79.9
22	10.88	15.5	1.9	45 54	19	248	35	260	50	.5892	137	.503	6	869		11.4	92.9
23	10.95	17.4	1.8	42 15	19	283	35	310	49	.5755	143	.509	7	896		24.6	106.0
24	11.01	19.2	1.8	38 36	18	318	36	359	47	.5612	148	.516	9	924		37.8	119.0
25	11.08	21.0	1.7	34 58	217	354	36	406	46	.5464	154	.525	12	951		51.0	132.1
26	11.14	22.7	1.6	31 21	17	390	36	452	44	.5310	161	.537	13	4.3979	.0141	64.1	145.2
27	11.21	24.3	1.6	27 44	17	426	36	496	43	.5149	170	.550	16	4.4006		77.3	158.2
28	11.28	25.9	1.5	24 7	16	462	36	539	42	.4979	177	.566	15	033		90.5	171.3
29	11.34	27.4	1.4	20 31	15	498	36	581	40	.4802	186	.581	15	060		103.7	184.4
30	11.41	28.8	1.4	16 56	215	534	37	621	37	.4616	196	.596	12	088		116.8	197.4
31	11.47	30.2	1.3	13 21	15	571	37	658	37	.4420	205	.608	10	115	.0142	130.0	210.5
June 1	11.54	31.5	1.2	9 46	14	608	37	695	35	.4215	217	.618	8	143		143.2	223.6
2	11.61	32.7	1.1	6 12	14	645	37	730	33	.3998	231	.626	6	170		156.4	236.6
3	11.67	33.8	1.1	1 2 38	13	682	37	763	32	.3767	244	.632	5	197		169.5	249.7
4	11.74	34.9	1.0	0 59 5	213	719	38	795	30	.3523	261	.637	6	225		182.7	262.8
5	11.80	35.9	.9	55 32	13	757	38	825	28	.3262	279	.643	7	252	.0143	195.9	275.8
6	11.87	36.8	.8	51 59	12	795	38	853	26	.2983	296	.650	9	280		209.1	288.9
7	11.93	37.6	.7	48 27	12	833	38	879	25	.2687	323	.659	12	307		222.2	302.0
8	12.00	38.3	.6	44 55	12	871	38	904	23	.2364	350	.671	16	334		235.4	315.0
9	12.07	38.9	.6	41 23	212	909	38	927	20	0.2014	382	.687	17	362		248.6	328.1
10	12.13	39.5	.4	37 51	11	947	38	947	19	+1.456	134	.704	18	389	.0144	261.8	341.2
11	12.20	39.9	.3	34 20	11	1.91985	38	966	18	.322	134	.722	17	416		275.0	354.2
12	12.26	40.2	.2	30 49	11	1.92023	38	984	15	.188	134	.739	17	444		288.1	7.3
13	12.33	40.4	.2	27 18	11	061	39	1.30999	14	1.054	134	.755	16	471		301.3	20.3
14	12.39	40.5	.1	23 48	10	100	39	1.31013	12	0.919	135	.769	14	499		314.5	33.4
15	12.46	40.6	.1	20 17	211	139	39	025	10	.784	135	.779	10	526	.0145	327.7	46.5
16	12.53	40.6	.0	16 47	10	178	38	035	9	.649	135	.788	9	553		340.8	59.5
17	12.59	40.5	.1	13 17	10	216	39	044	6	.514	135	.794	6	581		354.0	72.6
18	12.66	40.3	.2	9 46	11	255	38	050	5	.379	135	.800	6	608		7.2	85.7
19	12.72	39.9	.4	6 16	210	293	38	055	3	.243	136	.806	6	635	.0146	20.4	98.7
20	12.79	39.4	.5	0 2 46	10	331	39	058	1	+0.108	135	.814	8	663		33.5	111.8
21	12.85	38.8	.6	23 59 16	10	370	38	059	2	−0.028	136	.824	10	690		46.7	124.9
22	12.92	38.1	.7	55 46	10	408	38	057	3	.163	135	.836	12	718		59.9	137.9
23	12.99	37.4	.7	52 16	210	447	38	054	5	.299	136	.850	14	745	.0147	73.1	151.0
24	13.05	36.6	.8	48 46	10	485	38	049	7	.434	135	.865	15	772		86.3	164.1
25	13.12	35.7	.9	45 16	10	523	39	042	9	.569	135	.882	17	800		99.4	177.1
26	13.18	34.7	1.0	41 46	10	562	38	033	11	.704	135	.897	15	827		112.6	190.2
27	13.25	33.6	1.1	38 15	211	600	38	022	14	.839	135	.910	13	854	.0148	125.8	203.3
28	13.31	32.4	1.2	34 45	10	638	38	1.31008	15	0.974	135	.921	11	882		139.0	216.3
29	13.38	31.1	1.3	31 14	11	676	38	1.30993	16	1.108	134	.930	9	909		152.1	229.4
30	13.44	11 48 29.6	1.5	23 27 44	10	1.92714	38	1.30977	18	−1.242	134	−12.936	6	−4.4937	.0148	165.3	242.5
			1.6		211						133		7				

TABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h. 52m. mean time, Washington.

1854.	Sid. time Wash.	G.		H.		log g.		log h.		log i.		$f + \Delta_{\mathfrak{C}} f$		t.	p.	$\mathfrak{C}$	$\mathfrak{C} - \Gamma'$
	h.	h. m. s.		h. m. s.								s.		years.		°	°
July 1	13.51	11 48 28.0	1.6	23 24 13	211	1.92752	38	1.80959	20	n0.1386	399	—12.943	5	—4.4964	.0148	178.5	255.5
2	13.58	26.4	1.7	20 42	11	790	38	939	22	.1785	367	.948	6	4.4991		191.7	268.6
3	13.64	24.7	1.8	17 11	12	828	37	917	23	.2152	336	.954	9	4.5019		204.8	281.6
4	13.71	22.9	1.8	13 39	11	865	37	894	25	.2488	312	.963	12	046		218.0	294.7
5	13.77	21.1	1.9	10 8	212	902	37	869	27	.2800	290	.975	14	073		231.2	307.8
6	13.84	19.2	2.0	6 36	12	939	37	842	28	.3090	270	12.989	16	101	.0149	244.4	320.8
7	13.91	17.2	2.1	23 3 4	12	1.92976	37	814	30	.3360	253	13.005	17	128		257.5	333.9
8	13.97	15.1	2.2	22 59 32	13	1.93013	37	784	32	.3613	239	.022	18	156		270.7	347.0
9	14.04	12.9	2.3	55 59	13	050	37	752	34	.3852	224	.040	16	183		283.9	0.0
10	14.10	10.6	2.3	52 26	214	087	37	718	36	.4076	212	.056	16	210		297.1	13.1
11	14.17	8.3	2.4	48 52	14	123	36	682	38	.4288	203	.070	14	238	.0150	310.3	26.2
12	14.23	5.9	2.5	45 18	14	159	36	644	38	.4491	191	.081	11	265		323.4	39.2
13	14.30	3.4	2.6	41 44	14	195	36	606	40	.4682	183	.090	9	292		336.6	52.3
14	14.36	11 48 0.8	2.7	38 10	15	231	36	566	42	.4865	174	.097	7	320		349.8	65.4
15	14.43	11 47 58.1	2.7	34 35	216	267	36	524	43	.5039	164	.103	6	347		3.0	78.4
16	14.50	55.4	2.8	30 59	16	302	35	481	45	.5203	159	.108	5	375	.0151	16.1	91.5
17	14.57	52.6	2.8	27 23	16	337	35	436	46	.5362	153	.114	6	402		29.3	104.6
18	14.63	49.8	2.9	23 47	17	372	35	390	47	.5515	145	.122	8	429		42.5	117.6
19	14.69	46.9	2.9	20 10	18	407	35	343	49	.5660	141	.133	11	457		55.7	130.7
20	14.76	44.0	3.0	16 32	218	441	34	294	50	.5801	133	.145	12	484		68.8	143.8
21	14.82	41.0	3.1	12 54	19	475	34	244	51	.5934	130	.159	14	512	.0152	82.0	156.8
22	14.89	37.9	3.1	9 15	19	509	34	193	52	.6064	124	.174	15	539		95.2	169.9
23	14.96	34.8	3.1	5 36	20	543	34	141	53	.6188	120	.188	14	566		108.4	182.9
24	15.02	31.7	3.2	22 1 56	20	577	34	088	54	.6308	115	.201	13	594		121.5	196.0
25	15.09	28.5	3.2	21 58 16	221	610	33	1.30034	55	.6423	111	.212	11	621		134.7	209.1
26	15.15	25.3	3.2	54 35	21	643	33	1.29979	56	.6534	108	.219	7	648	.0153	147.9	222.1
27	15.22	22.1	3.3	50 54	22	676	33	923	57	.6642	103	.225	6	676		161.1	235.2
28	15.28	18.8	3.3	47 12	23	708	32	866	58	.6745	99	.230	5	703		174.2	248.3
29	15.35	15.5	3.4	43 29	24	740	32	808	59	.6844	97	.233	3	731		187.4	261.3
30	15.42	12.1	3.4	39 45	224	772	32	749	59	.6941	93	.237	4	758		200.6	274.4
31	15.48	8.7	3.4	36 1	25	804	32	690	60	.7034	90	.244	7	785	.0154	213.8	287.5
Aug. 1	15.55	5.3	3.4	32 16	25	835	31	630	61	.7124	87	.252	8	813		226.9	300.5
2	15.61	11 47 1.9	3.4	28 31	26	866	31	569	61	.7211	85	.263	11	840		240.1	313.6
3	15.68	11 46 58.5	3.5	24 45	27	897	31	508	61	.7296	81	.277	14	867		253.3	326.7
4	15.74	55.0	3.5	20 58	228	927	30	447	62	.7377	78	.292	15	895		266.5	339.7
5	15.81	51.5	3.4	17 10	28	957	30	385	62	.7455	77	.308	16	922	.0155	279.7	352.8
6	15.88	48.1	3.5	13 22	29	1.93987	30	323	62	.7532	74	.322	14	950		292.8	5.9
7	15.94	44.6	3.4	9 33	29	1.94016	29	261	62	.7606	71	.335	13	4.6977		306.0	18.9
8	16.01	41.2	3.4	5 44	31	045	29	199	62	.7677	71	.345	10	4.6004		319.2	32.0
9	16.07	37.8	3.5	21 1 53	231	074	29	136	63	.7746	69	.353	8	032		332.4	45.1
10	16.14	34.3	3.4	20 58 2	32	103	29	073	63	.7812	66	.358	5	059	.0155	345.5	58.1
11	16.20	30.9	3.5	54 10	32	131	28	1.29010	63	.7877	65	.362	4	087		358.7	71.2
12	16.27	27.4	3.4	50 18	31	159	28	1.28947	63	.7939	62	.367	5	114		11.9	84.2
13	16.34	24.0	3.4	46 24	34	187	28	884	63	.8000	61	.373	6	141		25.1	97.3
14	16.40	20.6	3.4	42 30	235	215	28	822	62	.8058	58	.380	7	169		38.2	110.4
15	16.47	17.2	3.4	38 35	36	242	27	760	62	.8114	56	.388	8	196	.0156	51.4	123.4
16	16.53	13.8	3.3	34 39	37	269	27	698	62	.8169	55	.398	10	223		64.6	136.5
17	16.60	10.5	3.3	30 42	37	296	27	636	62	.8222	53	.411	13	251		77.8	149.6
18	16.66	7.2	3.2	26 45	38	322	26	576	60	.8273	51	.424	13	278		91.0	162.6
19	16.73	4.0	3.2	22 47	239	348	26	517	59	.8321	48	.436	12	306		104.1	175.7
20	16.79	11 46 0.8	3.2	18 48	39	374	26	458	59	.8368	47	.448	12	333	.0157	117.3	188.8
21	16.86	11 45 57.6	3.1	14 49	41	399	25	399	59	.8414	46	.457	9	360		130.5	201.8
22	16.93	54.5	3.1	10 48	41	424	25	341	58	.8458	44	.464	7	388		143.7	214.9
23	16.99	51.4	3.0	6 47	242	449	25	284	57	.8500	42	.468	4	415		156.8	228.0
24	17.06	48.4	3.0	20 2 45	42	474	25	228	56	.8541	41	.471	3	442	.0158	170.0	241.0
25	17.12	45.4	2.9	19 58 43	44	498	24	173	55	.8580	39	.472	1	470		183.2	254.1
26	17.19	42.5	2.9	54 39	44	522	24	119	54	.8618	38	.473	1	497		196.4	267.2
27	17.25	39.6	2.8	50 35	244	546	24	067	52	.8654	36	.476	3	525		209.5	280.2
28	17.32	36.8	2.8	46 31	45	570	24	1.28015	52	.8688	34	.481	5	552	.0159	222.7	293.3
29	17.39	34.0	2.7	42 26	46	594	24	1.27965	50	.8721	33	.489	8	579		235.9	306.4
30	17.45	31.3	2.6	38 20	47	617	23	916	49	.8752	31	.500	11	607		249.1	319.4
31	17.52	11 45 28.7	2.6	19 34 13	247	1.94640	23	1.27869	47	n0.8782	30	—13.513	13	—4.6634	.0159	262.2	332.5
							23		45		29		13				

TABLE I—Continued. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1854.	Sid. time Wash.	G.		H.		log g.		log h.		log i.		$f + \Delta_t f$		t.	p.	☾	☾−☿
	h.	h. m. s.		h. m. s.								s.		years.		°	°
Sept. 1	17.58	11 45 26.1	2.5	19 30 6	248	1.94663	23	1.27824	44	n0.8811	27	−13.526	13	−4.6661	.0159	275.4	345.5
2	17.65	23.6	2.4	25 58	49	686	23	780	43	.8838	26	.539	12	689		288.6	358.6
3	17.71	21.2	2.3	21 49	49	709	22	737	41	.8864	24	.551	9	716		301.8	11.7
4	17.78	18.9	2.2	17 40	50	731	22	696	39	.8888	23	.560	7	744		315.0	24.7
5	17.85	16.7	2.2	13 30	250	753	22	657	37	.8911	22	.567	4	771		328.1	37.8
6	17.91	14.5	2.1	9 20	50	775	22	620	35	.8933	21	.571		799	.0160	341.3	50.9
7	17.98	12.4	2.0	5 10	51	797	22	585	33	.8954	19	.571	1	826		354.5	63.9
8	18.04	10.4	1.9	19 0 59	52	819	22	552	33	.8973	18	.572	2	853		7.7	77.0
9	18.11	8.5	1.8	18 56 47	53	840	21	521	31	.8991	17	.574	4	881		20.8	90.1
10	18.17	6.7	1.8	52 34	253	861	21	492	29	.9008	15	.578	5	908		34.0	103.1
11	18.24	4.9	1.7	48 21	53	882	21	464	28	.9023	15	.583	7	935	.0161	47.2	116.2
12	18.31	3.2	1.6	44 8	53	903	21	439	25	.9037	14	.590	7	963		60.4	129.3
13	18.37	1.6	1.5	39 55	54	924	21	416	23	.9050	13	.600	10	4.6990		73.5	142.3
14	18.44	11 45 0.1	1.4	35 41	54	945	21	395	21	.9061	11	.611	11	4.7017		86.7	155.4
15	18.50	11 44 58.7	1.3	31 27	255	966	21	376	19	.9071	10	.622	11	045		99.9	168.5
16	18.57	57.4	1.2	27 12	55	1.94986	20	360	16	.9079	8	.633	11	072	.0162	113.1	181.5
17	18.63	56.2	1.1	22 57	56	1.95007	21	346	14	.9087	8	.641	8	100		126.2	194.6
18	18.70	55.1	1.0	18 41	55	027	20	335	11	.9093	6	.647	6	127		139.4	207.7
19	18.77	54.1	.9	14 26	56	048	21	326	9	.9098	5	.651	4	154		152.6	220.7
20	18.83	53.2	.8	10 10	256	068	20	319	7	.9102	4	.652	1	182		165.8	233.8
21	18.90	52.4	.6	5 54	56	089	21	314	5	.9104	2	.653	1	209	.0162	178.9	246.8
22	18.96	51.8	.5	18 1 38	57	109	20	312	2	.9106	2	.653		236		192.1	259.9
23	19.03	51.3	.4	17 57 21	57	129	20	312	0	.9106	0	.654	1	264		205.3	273.0
24	19.10	50.9	.4	53 4	56	149	20	314	2	.9104	2	.659	5	291		218.5	286.0
25	19.16	50.5	.3	48 48	257	170	21	319	5	.9101	3	.665	6	319		231.6	299.1
26	19.23	50.2	.2	44 31	57	190	20	326	7	.9097	4	.674	9	346	.0163	244.8	312.2
27	19.29	50.0	.1	40 14	57	210	20	336	10	.9092	5	.686	12	373		258.0	325.2
28	19.36	49.9		35 57	57	230	20	349	13	.9086	6	.698	12	401		271.2	338.3
29	19.42	49.9	.1	31 40	57	250	20	363	14	.9078	8	.711	13	428		284.4	351.4
30	19.49	50.0	.2	27 23	256	271	21	380	17	.9069	9	.723	12	455		297.5	4.4
Oct. 1	19.56	50.2	.3	23 7	57	291	20	400	20	.9059	10	.733	10	483	.0164	310.7	17.5
2	19.62	50.5	.4	18 50	56	312	21	422	22	.9047	12	.739	6	510		323.9	30.6
3	19.69	50.9	.5	14 34	56	332	20	445	23	.9034	13	.744	5	538		337.1	43.6
4	19.75	51.4	.6	10 18	56	353	21	471	26	.9019	15	.746	2	565		350.2	56.7
5	19.82	52.0	.7	6 2	256	373	20	499	28	.9004	15	.747	1	592		3.4	69.8
6	19.88	52.7	.7	17 1 46	56	394	21	529	30	.8987	17	.748	1	620	.0165	16.6	82.8
7	19.95	53.4	.8	16 57 30	55	414	20	562	32	.8968	19	.751	3	647		29.8	95.9
8	20.02	54.2	.9	53 15	55	435	21	597	35	.8948	20	.757	6	674		42.9	109.0
9	20.08	55.1	1.0	49 0	55	456	21	634	37	.8927	21	.764	7	702		56.1	122.0
10	20.15	56.1	1.1	44 45	255	477	21	673	39	.8905	22	.774	10	729		69.3	135.1
11	20.21	57.2	1.3	40 30	54	498	21	714	41	.8881	24	.785	11	757	.0166	82.5	148.1
12	20.28	58.5	1.4	36 16	54	520	22	756	42	.8855	26	.797	12	784		95.7	161.2
13	20.34	11 44 59.9	1.4	32 2	53	542	22	801	45	.8828	27	.808	11	811		108.8	174.3
14	20.41	11 45 1.3	1.5	27 49	53	564	22	847	46	.8799	29	.818	10	839		122.0	187.3
15	20.48	2.8	1.5	23 36	253	586	22	895	48	.8769	30	.825	7	866		135.2	200.4
16	20.54	4.3	1.6	19 23	53	608	22	945	50	.8738	31	.830	5	893	.0167	148.4	213.5
17	20.61	5.9	1.7	15 11	52	630	23	1.27996	51	.8704	34	.833	3	921		161.5	226.5
18	20.67	7.6	1.8	10 59	53	653	23	1.28049	53	.8669	35	.834	1	948		174.7	239.6
19	20.74	9.4	1.8	6 47	251	676	23	103	54	.8632	37	.835	1	4.7976		187.9	252.7
20	20.80	11.2	1.9	16 2 36	50	699	23	158	55	.8594	38	.837	2	4.8003	.0168	201.1	265.7
21	20.87	13.1	1.9	15 58 26	50	722	23	214	56	.8554	40	.841	4	030		214.2	278.8
22	20.94	15.0	2.0	54 16	49	745	23	271	57	.8513	41	.847	6	058		227.4	291.9
23	21.00	17.0	2.0	50 7	249	769	24	329	58	.8470	43	.856	9	085		240.6	304.9
24	21.07	19.0	2.1	45 58	49	793	24	388	59	.8425	45	.868	12	113	.0169	253.8	318.0
25	21.13	21.1	2.2	41 49	48	817	24	448	60	.8378	47	.881	13	140		266.9	331.1
26	21.20	23.3	2.2	37 41	47	841	24	509	61	.8329	49	.894	13	167		280.1	344.1
27	21.26	25.5	2.3	33 34	246	866	25	571	62	.8279	50	.907	13	195		293.3	357.2
28	21.33	27.8	2.3	29 28	45	891	25	633	62	.8226	53	.919	12	222	.0170	306.5	10.3
29	21.40	30.1	2.3	25 23	45	916	25	696	63	.8172	54	.928	9	249		319.7	23.3
30	21.46	32.4	2.3	21 18	45	942	26	760	64	.8115	57	.934	6	277		332.8	36.4
31	21.52	11 45 34.7	2.4	16 17 13	244	1.95968	26	1.28824	64	n0.8057	58	−13.939	5	−4.8304	.0170	346.0	49.4
							26		66		61		3				

ABLE I—CONTINUED. FOR THE REDUCTION OF THE APPARENT PLACES OF FIXED STARS TO 1850.0.

Epoch 6h 52m. mean time, Washington.

1854.	Sid. time Wash.	G.		H.		log g.		log h.		$\frac{\log i.}{i}$		$f + \Delta_{\mathfrak{C}} f$		t.	p.	ℭ	ℭ—I′
	h.	h. m. s.		h. m. s.								s.		years.		°	°
Nov. 1	21.59	11 45 37.1	2.4	15 13 9	314	1.95994	26	1.28890	65	n0.7996	64	−13.942	4	−4.8332	.0170	359.2	62.5
2	21.66	39.5	2.4	9 5	42	1.96020	27	1.28955	66	.7932	66	.946	4	359		12.4	75.6
3	21.72	41.9	2.4	5 3	42	047	27	1.29021	66	.7866	66	.950	4	386		25.5	88.6
4	21.79	44.3	2.4	15 1 1	42	074	27	087	66	.7798	68	.956	6	414		38.7	101.7
5	21.86	46.7	2.4	14 56 59	43	101	27	153	66	.7728	70	.965	9	441		51.9	114.8
6	21.92	49.2	2.5	52 58	241	128	27	219	66	.7655	73	.977	12	468	.0171	65.1	127.8
7	21.99	51.7	2.5	48 58	40	156	28	285	66	.7579	76	13.990	13	496		78.2	140.9
8	22.05	54.2	2.5	44 58	40	184	28	351	66	.7500	79	14.003	13	523		91.4	154.0
9	22.12	56.7	2.5	40 59	39	212	28	417	66	.7419	81	.017	14	551		104.6	167.0
10	22.18	11 45 59.2	2.5	37 1	38	241	29	481	64	.7335	84	.029	12	578		117.8	180.1
11	22.25	11 46 1.6	2.4	33 3	238	270	29	545	64	.7248	87	.040	11	605	.0172	130.9	193.2
12	22.32	4.0	2.4	29 5	38	299	29	609	64	.7158	90	.049	9	633		144.1	206.2
13	22.38	6.4	2.4	25 8	37	328	29	672	63	.7064	94	.055	6	660		157.3	219.3
14	22.45	8.8	2.4	21 12	36	358	30	734	62	.6966	98	.060	5	688		170.5	232.4
15	22.51	11.2	2.4	17 16	36	388	30	796	62	.6866	100	.064	4	715		183.6	245.5
16	22.58	13.6	2.4	13 21	235	418	30	857	61	.6761	105	.068	4	742	.0173	196.8	258.5
17	22.64	16.0	2.3	9 26	35	449	31	918	61	.6653	108	.074	6	770		210.0	271.6
18	22.71	18.3	2.3	5 32	34	480	31	1.29977	59	.6539	114	.083	9	797		223.2	284.6
19	22.77	20.6	2.3	14 1 39	33	511	31	1.30035	58	.6422	117	.094	11	824		236.4	297.7
20	22.84	22.8	2.2	13 57 46	33	542	31	093	58	.6300	122	.108	14	852		249.5	310.7
21	22.91	25.0	2.2	53 53	233	574	32	149	56	.6173	127	.124	16	879	.0174	262.7	323.8
22	22.97	27.2	2.2	50 1	32	606	32	204	55	.6040	133	.140	16	907		275.9	336.9
23	23.04	29.3	2.1	46 10	31	638	32	258	54	.5903	137	.157	17	934		289.1	349.9
24	23.10	31.3	2.0	42 19	31	670	32	311	53	.5760	143	.172	15	961		302.2	3.0
25	23.17	33.3	2.0	38 29	30	703	33	362	51	.5610	150	.186	14	4.8989		315.4	16.1
26	23.23	35.3	2.0	34 39	230	736	33	412	50	.5452	158	.196	10	4.9016	.0175	328.6	29.1
27	23.30	37.2	1.9	30 49	30	769	33	460	48	.5288	164	.204	8	043		341.8	42.2
28	23.37	39.0	1.8	27 0	29	802	33	506	46	.5116	172	.211	7	071		354.9	55.3
29	23.43	40.7	1.7	23 11	29	835	33	551	45	.4935	181	.216	5	098		8.1	68.3
30	23.50	42.4	1.7	19 23	28	869	34	594	43	.4744	191	.224	8	126		21.3	81.4
Dec. 1	23.56	44.0	1.6	15 35	228	903	34	635	41	.4543	201	.232	8	153	.0176	34.5	94.5
2	23.63	45.5	1.5	11 47	28	937	34	675	40	.4331	212	.242	10	180		47.6	107.5
3	23.69	46.9	1.4	8 0	27	1.96971	34	713	38	.4107	224	.255	13	208		60.8	120.6
4	23.76	48.2	1.3	4 13	27	1.97005	34	749	36	.3868	239	.269	14	235		74.0	133.7
5	23.83	49.5	1.3	13 0 27	26	040	35	784	35	.3614	254	.286	17	262		87.2	146.7
6	23.89	50.7	1.2	12 56 40	227	075	35	816	32	.3347	267	.302	16	290	.0177	100.4	159.8
7	23.96	51.8	1.1	52 54	26	110	35	846	30	.3055	292	.317	15	317		113.5	172.9
8	0.02	52.8	1.0	49 9	25	145	35	875	29	.2743	312	.329	12	345		126.7	185.9
9	0.09	53.7	.9	45 23	26	180	35	901	26	.2405	338	.341	12	372		139.9	199.0
10	0.15	54.6	.9	41 38	25	215	35	926	25	n0.2038	367	.350	9	399		153.1	212.0
11	0.22	55.4	.8	37 53	225	251	36	948	22	−1.457	403	.356	6	427	.0178	166.2	225.1
12	0.29	56.1	.7	34 8	25	286	35	969	21	.314	143	.363	7	454		179.4	238.2
13	0.35	56.7	.6	30 23	25	322	36	1.30987	18	.171	143	.369	6	482		192.6	251.2
14	0.42	57.2	.5	26 38	25	357	35	1.31004	17	1.028	143	.376	7	509		205.8	264.3
15	0.48	57.6	.4	22 53	25	393	36	019	15	0.884	141	.385	9	536		218.9	277.4
16	0.55	57.9	.3	19 9	224	429	36	031	12	.740	111	.397	12	564	.0179	232.1	290.4
17	0.61	58.0	.1	15 24	25	465	36	040	9	.596	144	.412	15	591		245.3	303.5
18	0.68	58.0		11 40	24	501	36	048	8	.452	144	.428	16	618		258.5	316.6
19	0.75	57.9	.1	7 55	25	537	36	054	6	.307	145	.447	19	646		271.6	329.6
20	0.81	57.8	.1	4 11	224	573	36	057	3	.163	144	.465	18	673	.0180	284.8	342.7
21	0.88	57.6	.2	12 0 27	24	609	36	058	1	−0.018	145	.482	17	701		298.0	355.8
22	0.94	57.3	.3	11 56 42	25	645	36	058		+0.127	145	.497	15	728		311.2	8.8
23	1.01	56.9	.4	52 58	24	681	36	056	2	.272	145	.509	12	755		324.4	21.9
24	1.07	56.4	.5	49 13	225	717	36	051	5	.417	145	.519	10	783	.0181	337.5	35.0
25	1.14	55.8	.6	45 28	25	753	36	044	7	.562	144	.527	8	810		350.7	48.0
26	1.21	55.1	.7	41 44	24	789	36	034	10	.706	144	.534	7	837		3.9	61.1
27	1.27	54.3	.8	37 59	25	824	35	022	12	.850	144	.541	7	865		17.1	74.2
28	1.34	53.4	.9	34 14	225	860	36	1.31008	14	0.994	141	.549	8	892	.0182	30.2	87.2
29	1.40	52.4	1.0	30 29	25	895	35	1.30992	16	1.138	141	.560	11	920		43.4	100.3
30	1.47	51.3	1.1	26 44	25	931	36	974	18	.281	143	.572	12	947		56.6	113.3
31	1.53	11 46 50.1	1.2	11 22 59	25	1.97966	35	1.30954	20	+1.424	143	−14 587	15	−4.9974	.0182	69.8	126.4
			1.3		226		35		22		145		17				

FOR THE REDUCTION OF APPARENT DECLINATIONS TO MEAN.

Terms depending on ☾ and ☾ — Γ'

TABLE II*a*. $\Delta_{\mathbb{C}}\delta = +0''.0813 \sin 2\,\mathbb{C} \cos a - 0''.0886 \cos 2\,\mathbb{C} \sin a$

With a at top. $a=$ 0h. 0m. 20m. 40m. 12h. with change of signs. ☾		1h. 0m. 13h.			2h. 0m. 14h.			3h. 0m. 15h.			With a at the bottom.	
°	°	"	"	"	"	"	"	"	"	"	°	°
0	180	0.000	— .008	— .015	— .023	— .030	— .037	— .044	— .051	— .057	— .063	180	360
5	185	+ .014	+ .006	— .001	— .009	16	24	31	38	45	52	175	355
10	190	28	21	+ .013	+ .005	— .002	— .010	18	25	32	39	170	350
15	195	41	34	27	20	+ .012	+ .004	— .003	— .011	18	20	165	345
20	200	52	46	40	33	20	19	+ .011	+ .004	— .004	— .011	160	340
25	205	62	57	51	45	39	33	26	19	+ .011	+ .004	155	335
30	210	70	66	62	57	51	45	39	32	25	18	150	330
35	215	76	73	70	66	61	56	51	45	39	33	145	325
40	220	80	78	76	73	70	66	62	57	51	46	140	320
45	225	81	81	80	78	76	73	70	76	62	51	135	315
50	230	80	81	81	81	81	79	77	74	71	67	130	310
55	335	76	79	81	81	82	82	81	80	78	75	125	305
60	240	70	74	77	77	81	82	83	83	82	81	120	300
65	245	62	67	71	75	78	80	82	83	84	84	115	295
70	250	52	58	63	68	72	76	79	82	84	85	110	290
75	255	41	47	53	59	64	69	74	77	80	83	105	285
80	260	28	35	42	49	55	60	66	71	75	79	100	280
85	265	+ .014	22	29	36	43	50	56	62	67	72	95	275
90	270	00	+ .008	15	23	30	37	44	50	57	63	90	270
95	275	— .014	— .006	+ .001	+ .009	16	24	31	38	45	52	85	265
100	280	28	21	— .013	— .005	+ .002	+ .010	18	25	32	39	80	260
105	285	41	34	27	20	— .012	— .004	+ .003	+ .011	18	26	75	255
110	290	52	46	40	33	26	19	— .011	— .004	+ .004	+ .011	70	250
115	295	62	57	51	45	39	33	20	19	— .011	— .004	65	245
120	300	70	66	62	57	51	45	39	32	25	18	60	240
125	305	76	73	70	66	60	56	51	45	39	33	55	235
130	310	80	78	76	73	70	66	62	52	51	46	50	230
135	315	81	81	80	78	76	73	70	66	62	57	45	225
140	320	80	81	81	81	81	79	77	74	71	67	40	220
145	325	76	79	81	81	82	82	81	80	78	75	35	215
150	330	70	74	77	79	81	82	83	83	82	81	30	210
155	335	62	67	71	75	78	80	82	83	84	89	25	205
160	340	52	58	63	68	72	76	79	82	84	85	20	200
165	345	41	47	53	59	64	69	74	77	80	83	15	195
170	350	28	35	42	49	55	60	66	71	75	79	10	190
175	355	— 14	22	29	36	43	50	56	62	67	72	5	185
180	360	0.000	— .008	— .015	— .023	— .030	— .037	— .044	— .051	— .057	— .063	0	180
		$a=$ 12h. 0m. 24h. with	40m. 20m. change of signs.		11h. 0m. 23h.	40m. 20m.		10h. 0m. 22h.	40m. 20m.		9h. 0m. 21h.	☾ with a at the bottom.	

TABLE II*b*. $\Delta'_{\mathbb{C}}\delta = 0''.0270 \sin(\mathbb{C} - \Gamma') \cos a$

Change the signs for a in the upper line with ☾ — Γ' in the right hand column;

☾ — Γ'		$a=$ 0h. 24	1h. 23	2h. 22	3h. 21	4h. 20	5h. 19	6h. 18		
°	°	"							°	°
0	180	— 0.000	.000	.000	.000	.000	.000	.000	180	360
10	190	05	04	04	03	02	01	00	190	350
20	160	09	09	08	06	05	02	00	200	340
30	150	13	13	12	09	07	03	00	210	330
40	140	17	17	15	12	09	04	00	220	320
50	130	21	20	18	14	10	05	00	230	310
60	120	23	22	20	16	12	04	00	240	300
70	110	25	23	22	18	13	06	00	250	290
80	100	27	26	23	19	13	07	00	260	280
90	90	— 0.027	.026	.023	.019	.013	.007	.000	270	270
		$a=$ 12h. 12	11h. 13	10h. 14	9h. 15	8h. 16	7h. 17	6h. 18	☾ — Γ'	

And for a in the lower line with ☾ — Γ' in the left hand column.

FOR THE REDUCTION OF APPARENT DECLINATIONS TO MEAN.

Terms depending on ☾ and ☾ — Γ

TABLE IIa—CONTINUED. $\Delta_{\mathbb{C}}\delta = +0''.0813 \sin 2\,\mathbb{C} \cos a - 0''.0886 \cos 2\,\mathbb{C} \sin a.$

With a at top. $a=$	3h. 0m. 15h.	20m.	40m.	4h. 0m. 16h.	20m.	40m.	5h. 0m. 17h.	20m.	40m.	6h. 0m. 18h.	With a at the bottom.	
☾												
°	°	″	″	″	″	″	″	″	″	″	″	°	°
0	180	−0.063	− .068	− .073	− .077	− .080	− .083	− .085	− .087	− .088	− .089	180	360
5	185	52	58	64	69	73	77	81	84	86	87	175	355
10	190	39	46	52	58	64	69	78	77	80	83	170	350
15	195	20	33	40	46	52	58	64	69	73	77	165	345
20	200	− .011	18	20	33	40	46	52	58	63	68	160	340
25	205	+ .004	− .004	− .011	18	26	33	37	45	51	57	155	335
30	210	18	+ .011	+ .004	− .003	− .011	18	25	31	38	44	150	330
35	215	33	26	19	+ .012	+ .005	− .002	− .010	17	24	30	145	325
40	220	46	40	34	27	20	+ .013	+ .006	− .001	− .008	− .015	140	320
45	225	57	52	47	41	35	28	21	+ .014	+ .007	00	135	315
50	230	67	63	58	53	48	42	36	29	22	+ .015	130	310
55	235	75	72	69	65	60	55	49	43	37	30	125	305
60	240	81	79	77	79	70	66	61	56	50	44	120	300
65	245	84	84	82	80	78	75	71	67	62	57	115	295
70	250	85	86	86	85	84	82	79	76	72	68	110	290
75	255	83	85	86	87	87	86	85	83	80	77	105	285
80	260	79	82	84	86	87	88	88	87	85	83	100	280
85	265	72	76	80	83	85	87	88	88	88	87	95	275
90	270	63	68	73	77	80	83	85	87	88	89	90	270
95	275	52	58	64	69	73	77	81	84	86	87	85	265
100	280	39	46	52	58	64	69	73	77	80	83	80	260
105	285	26	33	40	46	52	58	64	69	73	77	75	255
110	290	+ .011	18	26	33	40	46	52	58	63	68	70	250
115	295	− .004	+ .004	+ .011	18	26	33	39	45	51	57	65	245
120	300	18	− .011	− .004	+ .003	+ .011	18	25	31	38	44	60	240
125	305	33	26	19	− .012	− .005	+ .002	− .010	17	24	30	55	235
130	310	46	40	34	27	20	− .013	− .006	+ .001	+ .008	+ .015	50	230
135	315	57	52	47	41	35	28	21	− .014	− .007	00	45	225
140	320	67	63	58	53	48	42	36	29	22	− .015	40	220
145	325	75	72	69	65	60	55	49	43	37	30	35	215
150	330	81	79	77	74	70	66	61	56	50	44	30	210
155	335	89	84	82	80	78	75	71	67	62	57	25	205
160	340	85	86	86	85	84	82	79	76	72	68	20	200
165	345	83	85	86	87	87	86	85	83	80	77	15	195
170	350	79	82	84	86	87	88	88	87	85	83	10	190
175	355	72	76	80	83	85	87	88	88	88	87	5	185
180	360	−0.063	− .068	− .073	− .077	− .080	− .083	− .085	− .087	− .088	− .089	0	180
	$a=$ 9h. 0m. 21h.	40m.	20m.	8h. 0m. 20h.	40m.	20m.	7h. 0m. 19h.	40m.	20m.	6h. 0m. 18m.	☾ With a at the bottom.	

TABLES FOR THE REDUCTION OF APPARENT RIGHT ASCENSIONS TO MEAN,

Terms which depend on ☾ and ☾ — ☉, (in seconds of time.)

TABLE III*a*. $\Delta'_{\zeta} f = +0^s.01248 \sin 2\,\zeta$.

☾				$\Delta'_{\zeta} f$		☾			
°	°	°	°	*s*		°	°	°	°
0	90	180	270	+0.0000	22	90	180	270	360
5	85	185	265	022	21	95	175	275	355
10	80	190	260	043	19	100	170	280	350
15	75	195	255	062	18	105	165	285	345
20	70	200	250	080	16	110	160	290	340
25	65	205	245	096	12	115	155	295	335
30	60	210	240	108	9	120	150	300	330
35	55	215	235	117	6	125	145	305	325
40	50	220	230	123	2	130	140	310	320
45	45	225	225	+0.0125	—	135	135	315	315

TABLE III*b*. $\Delta'_{\zeta} f = -0^s.0041 \sin (\zeta - \Gamma')$.

☾ — ☉		$\Delta'_{\zeta} f$		☾ — ☉	
°	°	*s*		°	°
0	180	−0.0000	+	180	360
10	170	07	7	190	350
20	160	14	6	200	340
30	150	20	6	210	330
40	140	26	5	220	320
50	130	31	5	230	310
60	120	36	3	240	300
70	110	39	1	250	290
80	100	40	1	260	280
90	90	−0.0041	+	270	270

TABLE IV*a*. $\Delta'_{\zeta} a = 0^s.00542 \sin 2\,\zeta \sin a + 0^s.0059 . \cos 2\,\zeta \cos a$.

☾		$a = 0h.$	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.		
°	°	*s*													°	°
0	180	+0.0059	+ 57	+ 51	+ 42	+ 29	+ 15	+ 00	− 15	− 29	− 42	− 51	− 57	− 59	90	270
5	185	58	59	55	48	37	24	09	− 06	21	35	46	54	58	95	275
10	190	55	59	57	53	44	32	19	+ 03	12	26	39	49	55	100	280
15	195	51	58	58	55	49	39	27	13	− 02	17	31	43	51	105	285
20	200	45	53	57	57	53	45	35	22	+ 07	− 07	22	35	45	110	290
25	205	38	47	53	56	55	50	41	30	16	+ 03	12	26	38	115	295
30	210	29	41	49	54	55	53	47	38	26	12	− 02	17	29	120	300
35	215	20	33	43	50	54	54	51	44	34	22	+ 08	− 07	20	125	305
40	220	10	24	35	45	51	54	53	49	41	31	18	+ 04	− 10	130	310
45	225	+ 00	14	27	38	47	52	54	52	47	38	27	14	00	135	315
50	230	− 10	+ 04	18	31	41	49	53	54	51	45	35	24	+ 10	140	320
55	235	20	− 07	+ 08	22	34	44	51	54	54	50	43	33	20	145	325
60	240	29	17	− 02	12	26	38	47	53	55	54	49	41	29	150	330
65	245	38	26	12	+ 03	16	30	41	50	55	56	53	47	38	155	335
70	250	45	35	22	− 07	+ 07	22	35	45	53	57	57	53	45	160	340
75	255	51	43	31	17	− 02	13	27	39	49	55	58	58	51	165	345
80	260	55	49	39	26	12	+ 03	19	32	44	53	57	59	55	170	350
85	265	58	54	46	35	21	− 04	09	24	37	48	55	59	58	175	355
90	270	−0.0059	− 57	− 51	− 42	− 29	− 15	+ 00	+ 15	+ 29	+ 42	+ 51	+ 57	+ 59	180	360
		$a = 12h.$	13*h*.	14*h*.	15*h*.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.	24*h*.	☾	

TABLE IV*b*. $\Delta'_{\zeta} a = -0^s.0018 \sin (\zeta - \Gamma') \sin a$.

☾ — ☉		$a = \begin{cases} 0h. \\ 12 \end{cases}$	1*h*. 11	2*h*. 10	3*h*. 9	4*h*. 8	5*h*. 7	6*h*. 6		
°	°	*s*							°	°
0	180	− 0.0000	00	00	00	00	00	00	180	360
10	170	00	01	02	02	03	03	03	190	350
20	160	00	02	03	04	05	06	06	200	340
30	150	00	02	04	06	08	09	09	210	330
40	140	00	03	06	08	10	11	12	220	320
50	130	00	03	07	09	12	13	14	230	310
60	120	00	04	08	11	13	15	16	240	300
70	110	00	05	09	12	15	16	17	250	290
80	100	00	05	09	13	16	17	18	260	280
90	90	− 0.0000	05	09	13	16	17	18	270	270
		$a = \begin{cases} 12h. \\ 24 \end{cases}$	13*h*. 23	14*h*. 22	15*h*. 21	16*h*. 20	17*h*. 19	18*h*. 18	☾ — ☉	

In tables IV*a* and IV*b*—change the signs, for *a* in the upper line with ☾ or ☾—☉ in the right hand column,
and " lower " " " " left hand column.

TABLE V. FOR THE REDUCTION OF APPARENT PLACES TO MEAN.

$$\Delta_{\odot} f = 0^{s}.00905 \sin(\odot + 262^{\circ}.6)$$

$$\Delta_{\odot}\delta = 0''.0588 \sin(\odot + 262^{\circ}.6) \cos a - 0''.0003 \cos(\odot + 280^{\circ}.3) \sin a$$

Com. Years.	Leap years.	$\Delta_{\odot} f$	0ᴴ	1ᴴ	2ᴴ	3ᴴ	4ᴴ	5ᴴ	6ᴴ	7ᴴ	8ᴴ	9ᴴ	10ᴴ	11ᴴ	12ᴴ
		s.	″	″	″	″	″	″	″	″	″	″	″	″	″
Jan. 0	1	−0.0005	−0.003	−0.001	+0.001	+0.004	+0.006	+0.008	+0.009	+0.010	+0.010	+0.008	+0.007	+0.005	+0.003
10	11	20	13	11	−0.007	−0.003	+0.001	05	08	11	13	15	15	15	13
20	21	35	23	20	17	11	−0.005	+0.001	07	13	17	21	23	24	23
30	31	50	32	30	25	19	11	−0.002	06	14	21	27	31	32	32
Feb. 9	10	62	40	38	32	25	16	05	05	15	24	31	37	40	40
19	20	73	47	44	39	31	20	09	03	15	26	35	42	46	47
Mar. 1		81	52	50	45	36	25	12	+0.001	14	27	38	45	50	52
11		87	56	54	48	40	28	14	00	14	28	40	48	54	56
21		90	58	56	51	42	31	17	−0.002	13	27	40	49	56	58
31		90	59	58	52	44	32	18	03	12	26	39	50	56	59
Apr. 10		88	57	56	52	44	32	20	05	10	24	37	47	54	57
20		83	54	53	50	42	32	20	06	08	22	34	43	51	54
30		75	49	49	45	40	30	20	07	06	18	30	39	45	49
May 10		66	43	43	41	36	28	19	08	+0.003	14	24	33	39	43
20		56	36	37	35	31	26	18	09	00	10	19	27	33	36
30		43	27	28	27	25	21	16	09	−0.002	05	13	19	24	27
June 9		29	18	19	19	19	17	14	09	04	+0.001	+0.007	11	15	18
19		−0.0014	−0.008	10	11	12	12	11	09	07	−0.004	00	+0.003	+0.006	+0.008
29		+0.0001	+0.001	−0.001	−0.003	−0.005	08	09	09	09	08	−0.007	−0.005	−0.003	−0.001
July 9		16	10	+0.008	+0.005	+0.001	−0.002	05	08	11	12	13	13	12	10
19		30	19	16	13	08	+0.004	−0.002	07	12	16	18	19	20	19
29		44	28	26	21	16	09	+0.001	06	13	19	24	27	28	28
Aug. 8		56	37	35	30	23	14	04	05	14	22	29	34	37	37
18		67	44	41	36	28	18	07	04	15	26	34	40	44	44
28		76	49	46	41	33	22	10	03	16	28	37	43	48	49
Sept. 7		83	54	52	47	37	26	13	−0.001	15	28	39	47	52	54
17		88	57	55	49	40	28	15	00	15	28	40	49	55	57
27		90	59	57	52	43	31	17	+0.002	13	27	41	50	57	59
Oct. 7		89	58	57	52	44	32	19	04	11	26	38	48	55	58
17		86	56	55	50	42	32	19	05	09	24	36	46	53	56
27		81	52	51	48	41	31	19	06	07	21	33	42	49	52
Nov. 6		73	47	47	44	38	29	19	07	05	17	28	38	43	47
16		62	40	41	39	34	27	18	08	−0.002	13	22	31	37	40
26		49	32	33	32	29	24	17	09	+0.001	08	16	24	29	32
Dec. 6		35	23	24	24	22	19	15	09	03	−0.003	10	16	20	23
16		20	13	14	15	15	14	12	09	06	+0.002	−0.003	+0.007	−0.010	13
26		+0.0005	+0.003	+0.004	+0.006	07	09	09	09	09	07	+0.005	−0.002	00	−0.003
36		−0.0011	−0.008	−0.006	−0.003	+0.000	+0.003	+0.006	+0.008	+0.010	+0.011	+0.012	+0.011	+0.010	+0.008

12ᴴ	13ᴴ	14ᴴ	15ᴴ	16ᴴ	17ᴴ	18ᴴ	19ᴴ	20ᴴ	21ᴴ	22ᴴ	23ᴴ	24ᴴ
with change of sign.												

These quantities are included in Tables I and VI.

The signs of $\Delta_{\odot}\delta$ must be changed when $a > 12^{h}$.

With $a - 6^{h}$ for the argument, instead of a, $\Delta_{\odot}\delta$ becomes $15\,\Delta'_{\odot}a$.

TABLE VI. TERMS OF NUTATION WHICH DEPEND ON $\odot$

$$nC_\odot = 0''.5053 \sin 2\odot + 0''.0588 \sin (\odot + 202°.6)$$

$\odot$	$nC_\odot$		$D_\odot$	
°	″		″	
0	−0.0583	175	+0.5524	2
1	.0408	175	.5522	9
2	.0233	175	.5513	15
3	−0.0058	174	.5498	22
4	+0.0116	174	.5476	28
5	.0290	173	.5448	35
6	.0463	171	.5413	42
7	.0634	171	.5371	48
8	.0805	169	.5323	55
9	.0974	167	.5268	61
10	.1141	165	.5207	67
11	.1306	163	.5140	74
12	.1469	161	.5066	79
13	.1630	158	.4987	86
14	.1788	156	.4901	92
15	.1944	152	.4809	98
16	.2096	150	.4711	103
17	.2246	146	.4608	109
18	.2392	143	.4499	114
19	.2535	139	.4385	120
20	.2674	136	.4265	125
21	.2810	131	.4140	129
22	.2941	127	.4011	134
23	.3068	124	.3877	140
24	.3192	118	.3737	143
25	.3310	115	.3594	148
26	.3425	109	.3446	153
27	.3534	105	.3293	156
28	.3639	100	.3137	160
29	.3739	94	.2977	163
30	.3833	90	.2814	167
31	.3923	84	.2647	170
32	.4007	79	.2477	173
33	.4086	73	.2304	176
34	.4159	68	.2128	178
35	.4227	62	.1950	181
36	.4289	57	.1769	183
37	.4346	51	.1586	184
38	.4397	45	.1402	186
39	.4442	39	.1216	188
40	.4481	33	.1028	189
41	.4514	28	.0839	190
42	.4542	21	.0649	190
43	.4563	15	.0459	191
44	.4578	9	.0268	192
45	.4587	4	+0.0076	191
46	.4591	3	−0.0115	191
47	.4588	9	.0306	191
48	.4579	15	.0497	190
49	.4564	20	.0687	189
50	.4544	27	.0876	187
51	.4517	33	.1063	187
52	.4484	38	.1250	185
53	.4446	44	.1435	183
54	.4402	50	.1618	181
55	.4352	56	.1799	179
56	.4296	61	.1978	176
57	.4235	66	.2154	174
58	.4169	72	.2328	170
59	.4097	78	.2498	168
60	+0.4019		−0.2666	

$\odot$	$nC_\odot$		$D_\odot$	
°	″		″	
60	+0.4019	82	−0.2666	164
61	.3937	88	.2830	161
62	.3849	93	.2991	157
63	.3756	97	.3148	153
64	.3659	103	.3301	149
65	.3556	107	.3450	145
66	.3449	112	.3595	140
67	.3337	115	.3735	135
68	.3222	120	.3870	131
69	.3102	124	.4001	126
70	.2978	128	.4127	121
71	.2850	132	.4248	115
72	.2718	135	.4363	110
73	.2583	139	.4473	105
74	.2444	141	.4578	99
75	.2303	145	.4677	93
76	.2158	148	.4770	87
77	.2010	150	.4857	81
78	.1860	153	.4938	75
79	.1707	155	.5013	69
80	.1552	157	.5082	63
81	.1395	159	.5145	56
82	.1236	160	.5201	50
83	.1076	162	.5251	43
84	.0914	163	.5294	37
85	.0751	164	.5331	30
86	.0587	165	.5361	24
87	.0422	165	.5385	17
88	.0257	166	.5402	10
89	+0.0091	166	.5412	4
90	−0.0075	166	.5416	4
91	.0241	166	.5412	9
92	.0407	166	.5403	17
93	.0573	165	.5386	23
94	.0738	164	.5363	29
95	.0902	162	.5334	37
96	.1064	162	.5297	43
97	.1226	160	.5254	49
98	.1386	159	.5205	55
99	.1545	156	.5150	62
100	.1701	154	.5088	68
101	.1855	152	.5020	75
102	.2007	150	.4945	81
103	.2157	147	.4864	87
104	.2304	144	.4777	92
105	.2448	141	.4685	98
106	.2589	138	.4587	101
107	.2727	134	.4483	110
108	.2861	131	.4373	115
109	.2992	127	.4258	120
110	.3119	124	.4138	125
111	.3243	119	.4013	130
112	.3362	114	.3883	135
113	.3476	111	.3748	140
114	.3587	106	.3608	144
115	.3693	101	.3464	149
116	.3794	96	.3315	152
117	.3890	91	.3163	157
118	.3981	87	.3006	160
119	.4068	82	.2846	163
120	−.04150		−0.2683	

$\odot$	$nC_\odot$		$D_\odot$	
°	″		″	
120	−0.4150	76	−0.2683	168
121	.4226	70	.2515	170
122	.4296	66	.2345	173
123	.4362	59	.2172	176
124	.4421	54	.1996	178
125	.4475	49	.1818	180
126	.4524	42	.1638	183
127	.4566	37	.1455	185
128	.4603	31	.1270	186
129	.4634	25	.1084	187
130	.4659	19	.0897	189
131	.4678	13	.0708	189
132	.4691	7	.0519	190
133	.4698	1	.0329	191
134	.4699	5	−0.0138	191
135	.4694	11	+0.0053	191
136	.4683	18	.0244	190
137	.4665	23	.0434	191
138	.4642	29	.0625	189
139	.4613	35	.0814	188
140	.4578	41	.1002	188
141	.4537	47	.1190	186
142	.4490	53	.1376	184
143	.4437	59	.1560	182
144	.4378	64	.1742	180
145	.4314	70	.1922	178
146	.4244	76	.2100	176
147	.4168	81	.2276	172
148	.4087	87	.2448	170
149	.4000	91	.2618	167
150	.3909	98	.2785	163
151	.3811	102	.2948	160
152	.3709	107	.3108	156
153	.3602	112	.3264	152
154	.3490	116	.3416	148
155	.3374	121	.3564	143
156	.3253	126	.3707	139
157	.3127	130	.3846	134
158	.2997	134	.3980	130
159	.2863	137	.4110	124
160	.2726	142	.4234	120
161	.2584	145	.4354	114
162	.2439	149	.4468	108
163	.2290	152	.4576	104
164	.2138	155	.4680	97
165	.1983	158	.4777	91
166	.1825	161	.4868	86
167	.1664	164	.4954	80
168	.1500	165	.5034	73
169	.1335	168	.5107	67
170	.1167	170	.5174	61
171	.0997	171	.5235	55
172	.0826	173	.5290	48
173	.0653	175	.5338	42
174	.0478	175	.5380	35
175	.0303	176	.5415	28
176	−0.0127	177	.5443	22
177	+0.0050	178	.5465	15
178	.0228	178	.5480	8
179	.0405	177	.5488	2
180	+0.0583		+0.5490	

TABLE VI—CONTINUED. TERMS OF NUTATION WHICH DEPEND ON ☉

$$D_{\odot} = 0''.5507 \cos 2\odot + 0''.0093 \cos(\odot + 280°.3.)$$

☉	$nC_{\odot}$		$D_{\odot}$	
°	″		″	
180	+0.0583	178	+0.5490	5
181	.0761	177	.5485	11
182	.0938	176	.5474	19
183	.1114	176	.5455	25
184	.1290	175	.5430	31
185	.1465	173	.5399	38
186	.1638	173	.5361	45
187	.1810	171	.5316	52
188	.1981	168	.5264	58
189	.2149	167	.5206	63
190	.2316	164	.5143	71
191	.2480	161	.5072	76
192	.2641	159	.4996	83
193	.2800	156	.4913	89
194	.2956	153	.4824	94
195	.3109	150	.4730	101
196	.3259	146	.4629	106
197	.3405	143	.4523	112
198	.3548	139	.4411	117
199	.3687	135	.4294	122
200	.3822	131	.4172	128
201	.3953	126	.4044	132
202	.4079	122	.3912	138
203	.4201	117	.3774	142
204	.4318	113	.3632	146
205	.4431	108	.3486	151
206	.4539	103	.3335	154
207	.4642	97	.3181	159
208	.4739	93	.3022	163
209	.4832	87	.2859	166
210	.4919	81	.2693	169
211	.5000	76	.2524	172
212	.5076	70	.2352	176
213	.5146	64	.2176	178
214	.5210	59	.1998	181
215	.5269	53	.1817	182
216	.5322	46	.1635	185
217	.5368	41	.1450	187
218	.5409	34	.1263	189
219	.5443	28	.1074	189
220	.5471	22	.0885	191
221	.5493	16	.0694	192
222	.5509	10	.0502	192
223	.5519	3	.0310	192
224	.5522	3	+0.0117	193
225	.5519	10	−0.0076	193
226	.5509	16	.0269	193
227	.5493	22	.0462	193
228	.5471	28	.0655	193
229	.5443	34	.0846	191
230	.5409	41	.1037	191
231	.5368	47	.1226	189
232	.5321	53	.1415	189
233	.5268	59	.1601	186
234	.5209	65	.1786	185
235	.5144	71	.1968	182
236	.5073	76	.2148	180
237	.4997	83	.2326	178
238	.4914	88	.2501	175
239	.4826	93	.2672	171
240	+0.4733		−0.2841	169

☉	$nC_{\odot}$		$D_{\odot}$	
°	″		″	
240	+0.4733	99	−0.2841	165
241	.4634	105	.3006	162
242	.4529	109	.3168	158
243	.4420	115	.3326	154
244	.4305	120	.3480	150
245	.4185	124	.3630	145
246	.4061	129	.3775	141
247	.3932	134	.3916	136
248	.3798	138	.4052	132
249	.3660	142	.4184	126
250	.3518	146	.4310	122
251	.3372	150	.4432	115
252	.3222	154	.4547	111
253	.3068	157	.4658	105
254	.2911	161	.4763	99
255	.2750	163	.4862	93
256	.2587	167	.4955	88
257	.2420	170	.5043	81
258	.2250	172	.5124	75
259	.2078	174	.5199	69
260	.1904	177	.5268	63
261	.1727	178	.5331	56
262	.1549	180	.5387	49
263	.1369	182	.5436	43
264	.1187	183	.5479	37
265	.1004	185	.5516	30
266	.0819	185	.5546	23
267	.0634	186	.5569	17
268	.0448	186	.5586	9
269	.0262	187	.5595	3
270	+0.0075	186	.5598	3
271	−0.0111	187	.5595	11
272	.0298	186	.5584	17
273	.0484	185	.5567	23
274	.0669	184	.5544	31
275	.0853	184	.5513	37
276	.1037	182	.5476	44
277	.1219	180	.5432	50
278	.1399	179	.5382	57
279	.1578	177	.5325	63
280	.1755	175	.5262	69
281	.1930	173	.5193	76
282	.2103	170	.5117	82
283	.2273	167	.5035	88
284	.2440	165	.4947	94
285	.2605	161	.4853	99
286	.2766	158	.4754	106
287	.2924	155	.4648	111
288	.3079	151	.4537	116
289	.3230	147	.4421	122
290	.3377	143	.4299	127
291	.3520	139	.4172	132
292	.3659	135	.4040	137
293	.3794	130	.3903	141
294	.3924	125	.3762	146
295	.4049	121	.3616	151
296	.4170	116	.3465	154
297	.4286	110	.3311	159
298	.4396	106	.3152	162
299	.4502	100	.2990	166
300	−0.4602		−0.2824	

☉	$nC_{\odot}$		$D_{\odot}$	
°	″		″	
300	−0.4602	95	−0.2824	169
301	.4697	90	.2655	172
302	.4787	83	.2483	175
303	.4870	79	.2308	178
304	.4949	72	.2130	181
305	.5021	67	.1949	183
306	.5088	60	.1766	185
307	.5148	55	.1581	187
308	.5203	48	.1394	188
309	.5251	42	.1206	190
310	.5293	37	.1016	192
311	.5330	30	.0824	192
312	.5360	23	.0632	192
313	.5383	18	.0440	193
314	.5401	11	.0247	194
315	.5412	5	−0.0053	194
316	.5417	1	+0.0141	193
317	.5416	8	.0334	193
318	.5408	13	.0527	192
319	.5395	20	.0719	191
320	.5375	27	.0910	190
321	.5348	32	.1100	189
322	.5316	39	.1289	187
323	.5277	44	.1476	185
324	.5233	50	.1661	184
325	.5183	56	.1845	181
326	.5127	62	.2026	178
327	.5065	68	.2204	176
328	.4997	74	.2380	173
329	.4923	80	.2553	169
330	.4843	85	.2722	166
331	.4758	90	.2888	163
332	.4668	95	.3051	159
333	.4573	100	.3210	155
334	.4473	105	.3365	151
335	.4368	111	.3516	147
336	.4257	115	.3663	142
337	.4142	119	.3805	137
338	.4023	124	.3942	133
339	.3899	129	.4075	128
340	.3770	132	.4203	123
341	.3638	137	.4326	117
342	.3501	140	.4443	112
343	.3361	144	.4555	106
344	.3217	147	.4661	101
345	.3070	150	.4762	94
346	.2920	154	.4856	89
347	.2766	156	.4945	83
348	.2610	159	.5028	77
349	.2451	162	.5105	70
350	.2289	164	.5175	65
351	.2125	165	.5240	57
352	.1960	168	.5297	52
353	.1792	169	.5349	45
354	.1623	171	.5394	38
355	.1452	172	.5432	32
356	.1280	173	.5464	25
357	.1107	174	.5489	18
358	.0933	175	.5507	12
359	.0758	175	.5519	6
360	−0.0583		−0.5521	

TABLE VII. TERMS OF NUTATION WHICH DEPEND ON $\mathfrak{Q}$

$n\mathrm{C}_2 = 6''.8667 \sin \mathfrak{Q} - 0''.0522 \sin 2\,\mathfrak{Q}$ $\mathrm{D}_2 = 9''.2236 \cos \mathfrak{Q} - 0''.08955 \cos 2\,\mathfrak{Q}$

$\mathfrak{Q}$	$n\mathrm{C}_2$		D_2		$\mathfrak{Q}$
°	″		″		°
0	+0.0000	—	+9.1341	+	360
1	.1150	1150	.1327	14	359
2	.2299	1149	.1256	71	358
3	.3448	1149	.1219	37	357
4	.4596	1148	.1125	94	356
5	.5742	1146	.1003	122	355
6	.7007	1145	.0855	148	354
7	.8170	1163	.0680	175	353
8	0.9330	1160	.0478	202	352
9	1.0488	1158	9.0249	229	351
10	.1643	1155	8.9993	256	350
11	.2791	1151	.9701	292	349
12	.3942	1148	.9402	319	348
13	.5086	1144	.9067	335	347
14	.6226	1140	.8705	362	346
15	.7361	1135	.8317	388	345
16	.8492	1131	.7903	414	344
17	1.9617	1125	.7463	440	343
18	2.0736	1119	.6997	466	342
19	.1850	1114	.6505	492	341
20	.2957	1107	.5987	518	340
21	.4058	1101	.5444	543	339
22	.5152	1094	.4876	568	338
23	.6239	1087	.4282	594	337
24	.7318	1079	.3663	619	336
25	.8390	1072	.3019	644	335
26	2.9454	1064	.2350	669	334
27	3.0509	1055	.1656	694	333
28	.1556	1047	.0939	717	332
29	.2593	1037	8.0197	742	331
30	.3621	1029	7.9431	766	330
31	.4640	1019	.8641	790	329
32	.5649	1009	.7828	813	328
33	.6648	999	.6991	837	327
34	.7636	988	.6132	859	326
35	.8613	977	.5249	883	325
36	3.9580	967	.4344	905	324
37	4.0535	955	.3416	928	323
38	.1478	943	.2466	950	322
39	.2409	931	.1494	972	321
40	.3329	920	7.0501	993	320
41	.4236	907	6.9487	1014	319
42	.5130	894	.8451	1036	318
43	.6011	881	.7395	1056	317
44	.6879	868	.6318	1077	316
45	.7733	854	.5221	1097	315
46	.8573	840	.4104	1117	314
47	4.9400	827	.2967	1137	313
48	5.0212	812	.1811	1156	312
49	.1010	798	6.0637	1174	311
50	.1792	782	5.9444	1193	310
51	.2560	768	.8232	1212	309
52	.3313	753	.7003	1229	308
53	.4050	737	.5756	1247	307
54	.4771	721	.4492	1264	306
55	.5476	705	.3211	1281	305
56	.6165	689	.1913	1298	304
57	.6838	673	5.0595	1314	303
58	.7494	656	4.9270	1329	302
59	.8133	639	.7926	1344	301
60	+5.8755	622 —	+4.6566	1360 +	300

$\mathfrak{Q}$	$n\mathrm{C}_2$		D_2		$\mathfrak{Q}$
°	″		″		°
60	+5.8755	—	+4.6566	+	300
61	.9360	605	.5191	1375	299
62	5.9948	588	.3803	1388	298
63	6.0518	570	.2401	1402	297
64	.1069	551	4.0985	1416	296
65	.1603	534	3.9556	1429	295
66	.2119	516	.8115	1441	294
67	.2617	498	.6662	1453	293
68	.3096	479	.5196	1467	292
69	.3556	460	.3720	1476	291
70	.3997	441	3.2233	1487	290
71	.4419	422	2.0735	1498	289
72	.4823	404	.9227	1508	288
73	.5207	384	.7710	1517	287
74	.5571	364	.6183	1527	286
75	.5916	345	.4648	1535	285
76	.6241	325	.3105	1543	284
77	.6546	305	2.1551	1554	283
78	.6832	286	1.9995	1556	282
79	.7097	265	.8430	1565	281
80	.7342	245	.6858	1572	280
81	.7567	225	.5280	1578	279
82	.7772	205	.3697	1583	278
83	.7956	184	.2109	1588	277
84	.8120	164	1.0517	1592	276
85	.8263	143	0.8921	1596	275
86	.8385	122	.7321	1600	274
87	.8487	102	.5718	1603	273
88	.8568	81	.4113	1605	272
89	.8628	60	.2505	1608	271
90	.8667	39	+0.0895	1610	270
91	.8685	18	−0.0715	1610	269
92	.8682	3	.2326	1611	268
93	.8659	23	.3937	1611	267
94	.8614	45	.5547	1610	266
95	.8548	66	.7157	1610	265
96	.8462	86	0.8765	1608	264
97	.8354	108	1.0372	1607	263
98	.8225	129	.1976	1604	262
99	.8075	150	.3577	1601	261
100	.7905	170	.5175	1598	260
101	.7713	192	.6769	1594	259
102	.7500	213	.8359	1590	258
103	.7267	233	1.9944	1585	257
104	.7013	254	2.1523	1579	256
105	.6738	275	.3097	1574	255
106	.6442	296	.4664	1567	254
107	.6126	316	.6225	1561	253
108	.5789	337	.7778	1553	252
109	.5432	357	2.9325	1547	251
110	.5051	381	3.0861	1536	250
111	.4656	395	.2390	1529	249
112	.4238	418	.3908	1518	248
113	.3799	439	.5417	1509	247
114	.3311	488	.6916	1499	246
115	.2863	448	.8405	1489	245
116	.2365	498	3.9882	1477	244
117	.1848	517	4.1348	1466	243
118	.1311	537	.2801	1453	242
119	.0754	557	.4242	1441	241
120	+6.0179	575 —	−4.5670	1428 +	240

$\mathfrak{Q}$	$n\mathrm{C}_2$		D_2		$\mathfrak{Q}$
°	″		″		°
120	+6.0179	—	−4.5670	+	240
121	5.9585	594	.7085	1415	239
122	.8972	613	.8485	1400	238
123	.8340	632	4.9871	1386	237
124	.7689	651	5.1242	1371	236
125	.7021	668	.2598	1356	235
126	.6334	687	.3938	1340	234
127	.5630	704	.5262	1324	233
128	.4908	722	.6570	1308	232
129	.4168	740	.7860	1290	231
130	.3411	757	5.9132	1272	230
131	.2637	774	6.0387	1255	229
132	.1847	790	.1624	1237	228
133	.1040	807	.2842	1218	227
134	5.0216	824	.4041	1199	226
135	4.9376	840	.5221	1180	225
136	.8521	855	.6380	1159	224
137	.7651	870	.7519	1139	223
138	.6765	886	.8638	1119	222
139	.5864	901	6.9736	1098	221
140	.4948	916	7.0812	1076	220
141	.4018	930	.1867	1055	219
142	.3073	945	.2900	1033	218
143	.2115	958	.3910	1010	217
144	.1143	972	.4897	987	216
145	4.0158	985	.5861	964	215
146	3.9160	998	.6803	942	214
147	.8150	1010	.7720	917	213
148	.7127	1023	.8613	893	212
149	.6092	1035	7.9482	869	211
150	.5045	1047	8.0326	844	210
151	.3987	1058	.1146	820	209
152	.2918	1069	.1940	794	208
153	.1839	1079	.2709	769	207
154	3.0749	1090	.3452	743	206
155	2.9649	1100	.4170	718	205
156	.8540	1109	.4861	691	204
157	.7422	1118	.5526	665	203
158	.6294	1128	.6164	638	202
159	.5158	1136	.6775	611	201
160	.4014	1144	.7359	584	200
161	.2862	1152	.7916	557	199
162	.1702	1160	.8446	530	198
163	2.0536	1166	.8948	502	197
164	1.9363	1173	.9422	474	196
165	.8183	1180	8.9869	447	195
166	.6998	1185	9.0287	418	194
167	.5807	1191	.0677	390	193
168	.4611	1196	.1038	361	192
169	.3410	1201	.1371	333	191
170	.2205	1205	.1676	305	190
171	1.0996	1209	.1952	276	189
172	0.9783	1213	.2199	247	188
173	.8567	1216	.2417	218	187
174	.7349	1218	.2607	190	186
175	.6128	1221	.2767	160	185
176	.4904	1224	.2898	131	184
177	.3680	1224	.3000	102	183
178	.2454	1226	.3073	73	182
179	.1227	1227	.3117	44	181
180	0.0000	1227 —	−9.3132	15 —	180

SUPPLEMENTARY TO TABLE VII.

Ω	$\Delta_{100} C_{\Omega}$	$\Delta_{100} D_{\Omega}$	Ω
°	″	″	° °
180	+0.0000	+0.0009	180 360
170	06	09	190 350
160	11	08	200 340
150	16	08	210 330
140	21	07	220 320
130	25	06	230 310
120	29	04	240 300
110	31	03	250 290
100	32	02	260 280
90	+0.0033	+0.0000	270 270

MULTIPLES.

	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
2	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	2
3	30	33	36	39	42	45	48	51	54	57	60	63	66	69	72	75	78	81	3
4	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	4
5	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	5
6	60	66	72	78	84	80	96	102	108	114	120	126	132	138	144	150	156	162	6
7	70	77	84	91	98	105	112	119	126	133	140	147	154	161	168	175	182	189	7
8	80	88	96	104	112	120	128	136	144	152	160	168	176	184	192	200	208	216	8
9	90	99	108	117	126	135	144	153	162	171	180	189	198	207	216	225	234	243	9
10	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	10

	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	
2	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	2
3	84	87	90	93	96	99	102	105	108	111	114	117	120	123	126	129	132	135	138	141	144	147	150	153	156	159	162	3
4	112	116	120	124	128	132	136	140	144	148	152	156	160	164	168	172	176	180	184	188	192	196	200	204	208	212	216	4
5	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	5
6	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324	6
7	196	203	210	217	224	231	238	245	252	259	266	273	280	287	294	301	308	315	322	329	336	343	350	357	364	371	378	7
8	224	232	240	248	256	264	272	280	288	296	304	312	320	328	336	344	352	360	368	376	384	392	400	408	416	424	432	8
9	252	261	270	279	288	297	306	315	324	333	342	351	360	369	378	387	396	405	414	423	432	441	450	459	468	477	486	9
10	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	10

	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	
2	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138	140	142	144	146	148	150	152	154	156	158	160	162	2
3	165	168	171	174	177	180	183	186	189	192	195	198	201	204	207	210	213	216	219	222	225	228	231	234	237	240	243	3
4	220	224	228	232	236	240	244	248	252	256	260	264	268	272	276	280	284	288	292	296	300	304	308	312	316	320	324	4
5	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405	5
6	330	336	342	348	354	360	366	372	378	384	390	396	402	408	414	420	426	432	438	444	450	456	462	468	474	480	486	6
7	385	392	399	406	413	420	427	434	441	448	455	462	469	476	483	490	497	504	511	418	525	532	539	546	553	560	567	7
8	440	448	456	464	472	480	488	496	504	512	520	528	536	544	552	560	568	576	584	592	600	608	616	624	632	640	648	8
9	495	504	513	522	531	540	549	558	567	576	585	594	603	612	621	630	639	648	657	666	675	684	693	702	711	720	729	9
10	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	10

	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	
2	164	166	168	170	172	174	176	178	180	182	184	186	188	190	192	194	196	198	200	202	204	206	208	210	212	214	216	2
3	246	249	252	255	258	261	264	267	270	273	276	279	282	285	288	291	294	297	300	303	306	309	312	315	318	321	324	3
4	328	332	336	340	344	348	352	356	360	364	268	372	376	380	384	388	392	396	400	404	408	412	416	420	424	428	432	4
5	410	415	420	425	430	435	440	445	450	455	460	463	470	475	480	485	490	495	500	505	510	515	520	525	530	535	540	5
6	492	498	504	510	516	522	528	534	540	546	552	558	564	570	576	582	588	594	600	606	612	618	624	630	636	642	648	6
7	574	581	588	595	602	609	616	623	630	637	614	651	658	665	672	679	686	693	700	707	714	721	728	735	742	749	756	7
8	656	664	672	680	688	696	704	712	720	728	736	744	752	760	768	776	784	792	800	808	816	824	832	840	848	856	864	8
9	738	747	756	765	774	783	792	801	810	819	828	837	846	855	864	873	882	891	900	909	918	927	936	945	954	963	972	9
10	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000	1010	1020	1030	1040	1050	1060	1070	1080	10

	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	
2	218	220	222	224	226	228	230	232	234	236	238	240	242	244	246	248	250	252	254	256	258	260	262	264	266	268	270	2
3	327	330	333	336	339	342	345	348	351	354	357	360	363	366	369	372	375	378	381	384	387	390	393	396	399	402	405	3
4	436	440	444	448	452	456	460	464	468	472	476	480	484	488	492	496	500	504	508	512	516	520	524	528	532	536	540	4
5	545	550	555	560	565	570	575	580	585	590	595	600	605	610	615	620	625	630	635	640	645	650	655	660	665	670	675	5
6	654	660	666	672	678	684	690	696	702	708	714	720	726	732	738	744	750	756	762	768	774	780	786	792	798	804	810	6
7	763	770	777	784	791	798	805	812	819	826	833	840	847	854	861	868	875	882	889	896	903	910	917	924	931	938	945	7
8	872	880	888	896	904	912	920	928	936	944	952	960	968	976	984	992	1000	1008	1016	1024	1032	1040	1048	1056	1064	1072	1080	8
9	981	990	999	1008	1017	1026	1035	1044	1053	1062	1071	1080	1089	1098	1107	1116	1125	1134	1143	1152	1161	1170	1179	1188	1197	1206	1215	9
10	1090	1100	1110	1120	1130	1140	1150	1160	1170	1180	1190	1200	1210	1220	1230	1240	1250	1260	1270	1280	1290	1300	1310	1320	1330	1340	1350	10

	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	
2	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300	302	304	306	308	310	312	314	316	318	320	322	324	2
3	408	411	414	417	420	423	426	429	432	435	438	441	444	447	450	453	456	459	462	465	468	471	474	477	480	483	486	3
4	544	548	552	556	560	564	568	572	576	580	584	588	592	596	600	604	608	612	616	620	624	628	632	636	640	644	648	4
5	680	685	690	695	700	705	710	715	720	725	730	735	740	745	750	755	760	765	770	775	780	785	790	795	800	805	810	5
6	816	822	828	834	840	846	852	858	864	870	876	882	888	894	900	906	912	918	924	930	936	942	948	954	960	966	972	6
7	952	959	966	973	980	987	994	1001	1008	1015	1022	1029	1036	1043	1050	1057	1064	1071	1078	1085	1092	1099	1106	1113	1120	1127	1134	7
8	1088	1096	1104	1112	1120	1128	1136	1144	1152	1160	1168	1176	1184	1192	1200	1208	1216	1224	1232	1240	1248	1256	1264	1272	1280	1288	1296	8
9	1224	1233	1242	1251	1260	1269	1278	1287	1296	1305	1314	1323	1332	1341	1350	1359	1368	1377	1386	1395	1404	1413	1422	1431	1440	1449	1458	9
10	1360	1370	1380	1390	1400	1410	1420	1430	1440	1450	1460	1470	1480	1490	1500	1510	1520	1530	1540	1550	1560	1570	1580	1590	1600	1610	1620	10

TABLE VIII. TERMS OF ABERRATION.

$$\mathrm{Tan}\,(\odot+\Delta\odot) = [0.037465]\tan\odot \qquad h = 20''.4451\,\frac{\sin\odot}{\sin(\odot+\Delta\odot)} = 18''.7553\,\frac{\cos\odot}{\cos(\odot+\Delta\odot)}$$

⊙		Δ⊙			$\frac{d\Delta\odot}{d\omega}$	Log h		$\frac{d\log h}{d\omega}$	⊙		⊙		Δ⊙			$\frac{d\Delta\odot}{d\omega}$	Log h		$\frac{d\log h}{d\omega}$	⊙	
°	°	°	′	″				−.000	°	°	°	°	°	′	″				−.000	°	°
0	180	+0	0	0	—	+0.00	1.27312		00,09	180	360	45	225	+2	28	6	—	+0.22	1.29266		00,04	135	315
1	181		5	24	5 24	.01	314	2	,09	179	359	46	226		27	47	0 19	.22	331	65	,04	134	314
2	182		10	48	5 24	.02	317	3	,09	178	358	47	227		27	18	0 29	.21	396	65	,04	133	313
3	183		16	11	5 23	.02	324	7	,09	177	357	48	228		26	38	0 40	.21	461	65	,04	132	312
4	184		21	33	5 22	.03	332	8	,09	176	356	49	229		25	47	0 51	.21	525	64	,04	131	311
					5 19			11									1 1			63			
5	185		26	52		.04	343		,09	175	355	50	230		24	46		.21	588		,03	130	310
6	186		32	10	5 18	.05	357	11	,09	174	354	51	231		23	35	1 11	.21	651	63	,03	129	309
7	187		37	25	5 15	.06	373	16	,09	173	353	52	232		22	13	1 22	.21	714	63	,03	128	308
8	188		42	37	5 12	.06	391	18	,09	172	352	53	233		20	41	1 32	.20	775	61	,03	127	307
9	189		47	45	5 8	.07	412	21	,09	171	351	54	234		19	0	1 41	.20	836	61	,03	126	306
					5 4			23									1 51			60			
10	190		52	49		.08	435		,09	170	350	55	235		17	9		.20	896		,02	125	305
11	191	0	57	49	5 0	.09	461	26	,09	169	349	56	236		15	9	2 0	.19	1.29955	59	,02	124	304
12	192	1	2	44	4 55	.09	488	27	,09	168	348	57	237		12	59	2 10	.19	1.30013	58	,02	123	303
13	193		7	34	4 50	.10	518	30	,09	167	347	58	238		10	40	2 19	.19	070	57	,02	122	302
14	194		12	19	4 45	.11	550	32	,08	166	346	59	239		8	11	2 29	.18	126	56	,02	121	301
					4 38			35									2 37			55			
15	195		16	57		.12	585		,08	165	345	60	240		5	34		.18	181		,02	120	300
16	196		21	30	4 33	.12	621	36	,08	164	344	61	241	2	2	48	2 46	.18	235	54	,02	119	299
17	197		25	55	4 25	.13	659	38	,08	163	343	62	242	1	59	55	2 53	.17	287	52	,02	118	298
18	198		30	14	4 19	.14	699	40	,08	162	342	63	243		56	53	3 2	.17	338	51	,02	117	297
19	199		34	25	4 11	.14	742	43	,08	161	341	64	244		53	43	3 10	.16	387	49	,02	116	296
					4 4			44									3 18			49			
20	200		38	29		.15	786	45	,08	160	340	65	245		50	25		.16	436		,02	115	295
21	201		42	25	3 56	.15	831	48	,08	159	339	66	246		47	0	3 25	.15	482	46	,01	114	294
22	202		46	12	3 47	.16	879	49	,08	158	338	67	247		43	28	3 32	.15	527	45	,01	113	293
23	203		49	51	3 39	.16	928	51	,08	157	337	68	248		39	49	3 39	.14	571	44	,01	112	292
24	204		53	21	3 30	.17	1.27979	51	,07	156	336	69	249		36	3	3 46	.14	613	42	,01	111	291
					3 21			52									3 52			40			
25	205		56	42		.17	1.28031	53	,07	155	335	70	250		32	11		.13	653		,01	110	290
26	206	1	59	54	3 12	.18	084	55	,07	154	334	71	251		28	13	3 58	.12	691	38	,01	109	289
27	207	2	2	57	3 3	.18	139	56	,07	153	333	72	252		24	9	4 4	.12	728	37	,01	108	288
28	208		5	50	2 53	.19	195	58	,07	152	332	73	253		20	0	4 9	.11	763	35	,01	107	287
29	209		8	33	2 43	.19	253	58	,07	151	331	74	254		15	45	4 15	.11	796	33	,01	106	286
					2 33			58									4 20			31			
30	210		11	6		.19	311		,06	150	330	75	255		11	25		.10	827		,00	105	285
31	211		13	29	2 23	.20	371	60	,06	149	329	76	256		7	1	4 24	.09	857	30	,00	104	284
32	212		15	41	2 12	.20	431	60	,06	148	328	77	257	1	2	32	4 29	.09	884	27	,00	103	283
33	213		17	43	2 2	.20	493	62	,06	147	327	78	258	0	57	59	4 33	.08	910	26	,00	102	282
34	214		19	35	1 52	.21	555	62	,06	146	326	79	259		53	22	4 37	.07	933	23	,00	101	281
					1 40			63									4 40			22			
35	215		21	15		.21	618	63	,06	145	325	80	260		48	42		.07	955		,00	100	280
36	216		22	45	1 30	.21	681	64	,06	144	324	81	261		43	59	4 43	.06	975	20	,00	99	279
37	217		24	5	1 20	.21	745	64	,05	143	323	82	262		39	13	4 46	.05	1.30992	17	,00	98	278
38	218		25	13	1 8	.21	809	65	,05	142	322	83	263		34	25	4 48	.05	1.31008	16	,00	97	277
39	219		26	10	0 57	.22	874	65	,05	141	321	84	264		29	34	4 51	.04	021	13	,00	96	276
					0 47												4 53			12			
40	220		26	57	0 36	.22	1.28939	66	,05	140	320	85	265		24	41	4 54	.03	033	9	,00	95	275
41	221		27	33	0 24	.22	1.29005	65	,05	139	319	86	266		19	47	4 56	.03	042	7	,00	94	274
42	222		27	57	0 14	.22	070	66	,05	138	318	87	267		14	51	4 56	.02	049	5	,00	93	273
43	223		28	11	0 3	.22	136	65	,04	137	317	88	268		9	55	4 57	.01	055	3	,00	92	272
44	224		28	14	0 3	.22	201	65	,04	136	316	89	269		4	58	4 58	.01	058	1	,00	91	271
45	225	+2	28	6	—	0.22	1.29266		00,04	135	315	90	270	+0	0	0	—	0.00	1.31059		00,00	90	270

$\omega = 23\ 27\ 30$

$\log 20.4451 = 1.310589$
$\log 18.7553 = 1.273124$

$H = 90° - (\odot + \Delta\odot)$

TABLE IX. ABERRATION.

$i = 8''.1388 \cos \odot$

⊙		Log i.		i		$\frac{di}{d\omega}$	⊙		⊙		Log i.		i		$\frac{di}{d\omega}$	⊙	
°	°			"			°	°	°	°			"			°	°
0	360	0.91056	6	+ 8.139	1	.00009	180	180	45	315	0.7600	77	+ 5.755	101	.00006	135	225
1	359	.91050	20	.138	4	9	179	181	46	314	.7523	80	.654	103	6	134	226
2	358	.91030	33	.134	6	9	178	182	47	313	.7443	82	.551	105	6	133	227
3	357	.90997	47	.128	9	9	177	183	48	312	.7361	86	.446	106	6	132	228
4	356	.90950	60	.119	11	9	176	184	49	311	.7275	89	.340	108	6	131	229
5	355	.90890	73	.108	14	9	175	185	50	310	.7186	92	.232	110	6	130	230
6	354	.90817	86	.094	16	9	174	186	51	309	.7094	95	.122	112	6	129	231
7	353	.90731	100	.078	19	9	173	187	52	308	.6999	99	5.011	113	6	128	232
8	352	.90631	113	.059	20	9	172	188	53	307	.6900	102	4.898	114	5	127	233
9	351	.90518	127	.039	24	9	171	189	54	306	.6798	107	.784	116	5	126	234
10	350	.90391	140	8.015	26	9	170	190	55	305	.6691	110	.668	117	5	125	235
11	349	.90251	154	7.989	28	9	169	191	56	304	.6581	114	.551	118	5	124	236
12	348	.90097	168	.961	31	9	168	192	57	303	.6467	119	.433	120	5	123	237
13	347	.89929	182	.930	33	9	167	193	58	302	.6348	124	.313	121	5	122	238
14	346	.89747	196	.897	35	9	166	194	59	301	.6224	129	.192	122	5	121	239
15	345	.89551	210	.862	38	9	165	195	60	300	.6095	134	4.070	124	5	120	240
16	344	.89341	225	.824	41	9	164	196	61	299	.5961	139	3.946	125	4	119	241
17	343	.89116	239	.783	43	9	163	197	62	298	.5822	146	.821	126	4	118	242
18	342	.88877	254	.740	45	9	162	198	63	297	.5676	152	.695	127	4	117	243
19	341	.88623	268	.695	47	9	161	199	64	296	.5524	159	.568	128	4	116	244
20	340	.88355	284	.648	50	9	160	200	65	295	.5365	166	.440	130	4	115	245
21	339	.87071	298	.598	52	8	159	201	66	294	.5199	175	.310	130	4	114	246
22	338	.87773	314	.546	54	8	158	202	67	293	.5024	183	.180	131	4	113	247
23	337	.87459	330	.492	57	8	157	203	68	292	.4841	192	3.049	132	3	112	248
24	336	.87129	345	.435	59	8	156	204	69	291	.4649	203	2.917	133	3	111	249
25	335	.86784	362	.376	61	8	155	205	70	290	.4446	214	.784	134	3	110	250
26	334	.86422	378	.315	63	8	154	206	71	289	.4232	227	.650	135	3	109	251
27	333	.86044	394	.252	66	8	153	207	72	288	.4005	240	.515	135	3	108	252
28	332	.85650	412	.186	68	8	152	208	73	287	.3765	256	.380	137	3	107	253
29	231	.85238	429	.118	70	8	151	209	74	286	.3509	273	.243	137	3	106	254
30	330	.84809	446	7.048	72	8	150	210	75	285	.3236	294	2.106	137	2	105	255
31	329	.84363	465	6.976	74	8	149	211	76	284	.2942	316	1.969	138	2	104	256
32	328	.83898	483	.902	76	8	148	212	77	283	.2626	342	.831	139	2	103	257
33	327	.83415	501	.826	79	8	147	213	78	282	.2284	372	.692	139	2	102	258
34	326	.82914	521	.747	80	8	146	214	79	281	.1912	410	.553	140	2	101	259
35	325	.82393	541	.667	82	7	145	215	80	280	.1502	453	.413	140	2	100	260
36	324	.81852	561	.585	85	7	144	216	81	279	.1049	508	.273	140	1	99	261
37	323	.81291	582	.500	87	7	143	217	82	278	0.0541	576	.133	141	1	98	262
38	322	.80709	603	.413	88	7	142	218	83	277	9.9965	667	0.992	141	1	97	263
39	321	.80106	625	.325	90	7	141	219	84	276	.9298	789	.851	142	1	96	264
40	320	.79481	647	.235	93	7	140	220	85	275	.8509	968	.709	141	1	95	265
41	319	.78834	670	.142	94	7	139	221	86	274	.7541	1247	.568	142	1	94	266
42	318	.78164	695	6.048	96	7	138	222	87	273	.6294	1760	.426	142	0	93	267
43	317	.77469	719	5.952	97	7	137	223	88	272	.4534	3009	.284	142	0	92	268
44	316	.76750	745	.855	100	7	136	224	89	271	9.1525		.142	142	0	91	269
45	315	0.76005		+ 5.755		.00006	135	225	90	270	—		+ 0.000		.00000	90	270

$\omega_{\odot} = 23\ 27\ 30$

$\frac{d \log i}{d\omega} = 0.00000{,}485$

TABLE X ANNUAL PRECESSIONS, 1850

0h, XIIh. 0h. Δδ +, Δα +

12h Δδ −, Δα −

α	Δδ	(Δα)	a	α	Δδ	(Δα)	a	α	Δδ	log (Δα)	a
m. s.	″	s.	s. m.	m. s.	″	s.	s. m.	m. s.	″		s. m.
0 0	20.0561	0.00000	0 60	10 0	20.0373	0.05782	0 50	20 0	19.9801	9.06646	0 40
10	561	0097	50	10	367	5929	50	10	788	7005	50
20	561	0195	40	20	360	6027	40	20	775	7362	40
30	563	0292	30	30	353	6124	30	30	762	7716	30
40	563	0389	20	40	347	6221	20	40	749	8066	20
50	563	0486	10	50	340	6318	10	50	736	8414	10
1 0	562	0583	0 59	11 0	333	6415	0 49	21 0	723	8759	0 39
10	562	0681	50	10	326	6512	50	10	709	9101	50
20	561	0778	40	20	319	6609	40	20	696	9441	40
30	560	0875	30	30	311	6706	30	30	682	9.09778	30
40	559	0972	20	40	304	6804	20	40	668	9.10112	20
50	558	1070	10	50	297	6901	10	50	655	0444	10
2 0	556	1167	0 58	12 0	289	6998	0 48	22 0	641	0773	0 38
10	555	1264	50	10	281	7095	50	10	627	1100	50
20	554	1361	40	20	274	7192	40	20	612	1425	40
30	552	1458	30	30	266	7289	30	30	598	1747	30
40	550	1556	20	40	258	7386	20	40	584	2066	20
50	549	1653	10	50	250	7483	10	50	569	2383	10
3 0	547	1750	0 57	13 0	241	7580	0 47	23 0	555	2698	0 37
10	545	1847	50	10	233	7677	50	10	540	3010	50
20	543	1945	40	20	225	7774	40	20	525	3321	40
30	541	2042	30	30	216	7871	30	30	511	3629	30
40	538	2139	20	40	207	7969	20	40	496	3934	20
50	536	2236	10	50	199	8066	10	50	481	4238	10
4 0	533	2334	0 56	14 0	190	8163	0 46	24 0	465	4540	0 36
10	531	2431	50	10	181	8260	50	10	450	4839	50
20	528	2528	40	20	172	8357	40	20	435	5136	40
30	525	2625	30	30	163	8454	30	30	419	5432	30
40	522	2723	20	40	153	8551	20	40	403	5725	20
50	519	2820	10	50	144	8648	10	50	388	6016	10
5 0	516	2917	0 55	15 0	135	8745	0 45	25 0	372	6306	0 35
10	513	3014	50	10	125	8842	50	10	356	6594	50
20	510	3111	40	20	115	8939	40	20	340	6879	40
30	506	3208	30	30	105	9036	30	30	324	7162	30
40	503	3306	20	40	095	9133	20	40	308	7444	20
50	499	3403	10	50	085	9230	10	50	291	7724	10
6 0	495	3500	0 54	16 0	075	9327	0 44	26 0	275	8002	0 34
10	491	3597	50	10	065	9424	50	10	258	8278	50
20	487	3695	40	20	055	9521	40	20	242	8553	40
30	483	3792	30	30	044	9618	30	30	225	8826	30
40	479	3889	20	40	034	9715	20	40	208	9097	20
50	475	3986	10	50	023	9812	10	50	191	9366	10
7 0	470	4083	0 53	17 0	012	0.09909	0 43	27 0	174	9634	0 33
10	466	4181	50	10	20.0002	0.10006	50	10	157	9.19900	50
20	461	4278	40	20	19.9991	0103	40	20	139	9.20164	40
30	457	4375	30	30	980	0200	30	30	122	0427	30
40	452	4472	20	40	968	0297	20	40	104	0688	20
50	447	4569	10	50	957	0394	10	50	087	0948	10
8 0	442	4666	0 52	18 0	946	0491	0 42	28 0	069	1206	0 32
10	437	4764	50	10	934	0588	50	10	051	1462	50
20	432	4861	40	20	923	0685	40	20	033	1717	40
30	426	4958	30	30	911	0781	30	30	19.9015	1971	30
40	421	5055	20	40	899	0878	20	40	19.8997	2223	20
50	415	5152	10	50	887	0975	10	50	979	2473	10
9 0	409	5249	0 51	19 0	875	1072	0 41	29 0	960	2722	0 31
10	404	5347	50	10	863	1169	50	10	942	2969	50
20	398	5444	40	20	851	1266	40	20	923	3215	40
30	392	5541	30	30	838	1363	30	30	905	3460	30
40	[illegible]	[illegible]	20	40	[illegible]	1459	20	40	886	3703	20
50	[illegible]	[illegible]	10	50	[illegible]	1556	10	50	867	3945	10
10	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	10	30 0	19.8848	9.24186	0 30

12h Δδ +, Δα − XIIh, XXIIIh.

TABLE X—Continued. ANNUAL PRECESSIONS, 1850.

0h, XIIh. **0h. Δδ +, Δα +** **12h. Δδ —, Δα —**

a	$\Delta_0\delta$		log ($\Delta_0\alpha$)		a	a	$\Delta_0\delta$		log ($\Delta_0\alpha$)		a	a	$\Delta_0\delta$		log ($\Delta_0\alpha$)		a
m. s.	"				s. m.	m. s.	"				s. m.	m. s.	"				s. m.
30 0	**19.8848**		**9.24186**		**0 30**	**40 0**	**19.7517**		**9.36583**		**0 20**	**50 0**	**19.5810**		**9.46150**		**0 10**
10	829	19	4425	239	50	10	492	25	6762	179	50	10	778	32	6292	142	50
20	810	19	4663	238	40	20	466	26	6940	178	40	20	746	32	6434	142	40
30	791	19	4900	237	30	30	440	26	7117	177	30	30	715	31	6575	141	30
40	771	20	5135	235	20	40	415	25	7294	177	20	40	683	32	6716	141	20
50	752	19	5369	234	10	50	389	26	7470	176	10	50	651	32	6856	140	10
31 0	**732**	20	5602	233	**0 29**	**41 0**	**363**	26	7644	174	**0 19**	**51 0**	**619**	32	6996	140	**0 9**
10	712	20	5833	231	50	10	337	26	7818	174	50	10	586	33	7136	140	50
20	692	20	6063	230	40	20	311	26	7992	174	40	20	554	32	7275	139	40
30	672	20	6292	229	30	30	285	27	8165	173	30	30	522	32	7413	138	30
40	652	20	6520	228	20	40	258	26	8337	172	20	40	489	33	7551	138	20
50	632	20	6747	227	10	50	232	27	8508	171	10	50	456	33	7688	137	10
32 0	**612**	20	6972	225	**0 28**	**42 0**	**205**	26	8679	171	**0 18**	**52 0**	**424**	32	7825	137	**0 8**
10	592	20	7196	224	50	10	179	27	8849	170	50	10	391	33	7962	137	50
20	571	21	7419	223	40	20	152	27	9019	170	40	20	358	33	8098	136	40
30	551	20	7641	222	30	30	125	27	9188	169	30	30	325	33	8234	136	30
40	530	21	7861	220	20	40	098	27	9356	168	20	40	291	34	8369	135	20
50	509	21	8080	219	10	50	071	27	9523	167	10	50	258	33	8504	135	10
33 0	**488**	21	8299	219	**0 27**	**43 0**	**044**	27	9690	167	**0 17**	**53 0**	**225**	33	8638	134	**0 7**
10	467	21	8516	217	50	10	**19.7017**	27	**9.39856**	166	50	10	191	34	8772	134	50
20	446	21	8733	217	40	20	**19.6990**	27	**9.40021**	165	40	20	158	33	8905	133	40
30	425	21	8948	215	30	30	962	28	0186	165	30	30	124	34	9038	133	30
40	404	21	9162	214	20	40	935	27	0350	164	20	40	090	34	9171	133	20
50	383	21	9375	213	10	50	907	28	0513	163	10	50	056	34	9303	132	10
34 0	**361**	22	9586	211	**0 26**	**44 0**	**879**	28	0676	163	**0 16**	**54 0**	**19.5022**	34	9435	132	**0 6**
10	339	22	**9.29797**	211	50	10	851	28	0838	162	50	10	**19.4988**	34	9566	131	50
20	318	21	**9.30007**	210	40	20	823	28	1000	162	40	20	954	34	9697	131	40
30	296	22	0216	209	30	30	795	28	1161	161	30	30	920	35	9828	131	30
40	274	22	0423	207	20	40	767	28	1321	160	20	40	885	34	**9.49958**	130	20
50	252	22	0630	207	10	50	739	29	1481	160	10	50	851	35	**9.50087**	129	10
35 0	**230**	22	0836	206	**0 25**	**45 0**	**710**	28	1640	159	**0 15**	**55 0**	**816**	34	0216	129	**0 5**
10	207	23	1040	204	50	10	682	29	1798	158	50	10	782	35	0345	129	50
20	185	22	1244	204	40	20	653	29	1956	158	40	20	747	35	0474	129	40
30	163	22	1447	203	30	30	624	28	2113	157	30	30	712	35	0602	128	30
40	140	23	1649	202	20	40	596	29	2270	157	20	40	677	35	0730	128	20
50	117	23	1849	200	10	50	567	29	2426	156	10	50	642	35	0857	127	10
36 0	**095**	22	2049	200	**0 24**	**46 0**	**538**	29	2582	156	**0 14**	**56 0**	**606**	36	0984	127	**0 4**
10	072	23	2248	199	50	10	509	30	2737	155	50	10	571	35	1110	126	50
20	049	23	2446	198	40	20	479	29	2891	154	40	20	536	35	1236	126	40
30	026	23	2643	197	30	30	450	29	3045	154	30	30	500	36	1362	126	30
40	**19.8003**	23	2840	197	20	40	421	30	3198	153	20	40	464	36	1487	125	20
50	**19.7979**	24	3035	195	10	50	391	30	3351	153	10	50	429	35	1612	125	10
37 0	**956**	23	3229	194	**0 23**	**47 0**	**361**	29	3503	152	**0 13**	**57 0**	**393**	36	1737	125	**0 3**
10	933	23	3422	193	50	10	332	30	3655	152	50	10	357	36	1861	124	50
20	909	24	3615	193	40	20	302	30	3806	151	40	20	321	36	1985	124	40
30	885	24	3807	192	30	30	272	30	3956	150	30	30	285	36	2109	124	30
40	861	24	3998	191	20	40	242	30	4106	150	20	40	248	37	2232	123	20
50	837	24	4188	190	10	50	212	30	4255	149	10	50	212	36	2354	122	10
38 0	**813**	24	4377	189	**0 22**	**48 0**	**181**	31	4404	149	**0 12**	**58 0**	**176**	36	2476	122	**0 2**
10	789	24	4565	188	50	10	151	30	4552	148	50	10	139	37	2598	122	50
20	765	24	4753	188	40	20	120	31	4700	148	40	20	103	36	2720	122	40
30	741	24	4940	187	30	30	090	30	4847	147	30	30	066	37	2841	121	30
40	716	25	5125	185	20	40	059	31	4994	147	20	40	**19.4029**	37	2962	121	20
50	692	24	5310	185	10	50	**19.6028**	31	5140	146	10	50	**19.3992**	37	3082	120	10
39 0	**667**	25	5495	185	**0 21**	**49 0**	**19.5997**	31	5286	146	**0 11**	**59 0**	**955**	38	3202	120	**0 1**
10	642	25	5678	183	50	10	966	31	5431	145	50	10	917	37	3322	120	50
20	617	25	5861	183	40	20	935	31	5576	145	40	20	880	37	3442	119	40
30	592	25	6042	181	30	30	904	32	5720	144	30	30	843	38	3561	119	30
40	567	25	6223	181	20	40	872	31	5864	144	20	40	805	37	3680	118	20
50	542	25	6403	180	10	50	841	31	6007	143	10	50	768	38	3798	118	10
0	**19.7517**		**9.36583**		**0 20**	**50 0**	**19.5810**		**9.46150**		**0 10**	**60 0**	**19.3730**		**9.53916**		**0 0**

11h. Δδ —, Δα + **23h. Δδ +, Δα —** **XIh, XXIIIh.**

TABLE X– Continued. ANNUAL PRECESSIONS, 1850.

1h, XIIIh. **1h.** $\Delta\delta+$, $\Delta\alpha+$ **13h.** $\Delta\delta-$, $\Delta\alpha-$

α	$\Delta_0\delta$		$log\ (\Delta_0\alpha)$		α
m. s.	″				s. m.
0 0	**19.3730**	38	9.53916	118	**0 60**
10	692	38	4034	117	50
20	654	38	4151	117	40
30	616	38	4268	117	30
40	578	38	4385	116	20
50	540	38	4501	116	10
1 0	502	38	4617	116	**0 59**
10	463	39	4733	115	50
20	425	38	4848	115	40
30	386	39	4963	115	30
40	347	39	5078	114	20
50	309	38	5192	114	10
2 0	270	39	5306	114	**0 58**
10	231	39	5420	113	50
20	191	40	5533	113	40
30	152	39	5646	113	30
40	113	39	5759	113	20
50	073	40	5872	113	10
3 0	**19.3034**	39	5984	112	**0 57**
10	**19.2994**	40	6095	111	50
20	955	39	6207	112	40
30	915	40	6318	111	30
40	875	40	6429	111	20
50	835	40	6540	111	10
4 0	794	41	6650	110	**0 56**
10	754	40	6760	110	50
20	714	40	6870	110	40
30	673	41	6979	109	30
40	633	40	7088	109	20
50	592	41	7197	108	10
5 0	551	41	7306	109	**0 55**
10	511	40	7414	108	50
20	470	41	7522	108	40
30	429	41	7629	107	30
40	387	42	7737	108	20
50	346	41	7844	107	10
6 0	305	41	7950	106	**0 54**
10	263	42	8057	107	50
20	222	41	8163	106	40
30	180	42	8269	106	30
40	138	42	8375	106	20
50	096	42	8480	105	10
7 0	054	42	8585	105	**0 53**
10	**19.2012**	42	8690	105	50
20	**19.1970**	42	8794	104	40
30	928	42	8899	105	30
40	885	43	9003	104	20
50	843	42	9106	103	10
8 0	800	43	9210	104	**0 52**
10	758	42	9313	103	50
20	715	43	9416	103	40
30	672	43	9518	102	20
40	629	43	9621	103	30
50	586	43	9723	102	10
9 0	543	43	9825	102	**0 51**
10	499	44	9.59926	101	50
20	456	43	9.60028	102	40
30	112	44	0129	101	30
40	369	43	0230	101	20
50	325	44	0330	100	10
10 0	**19.1281**		9.60430		**0 50**

α	$\Delta_0\delta$		$log\ (\Delta_0\alpha)$		α
m. s.	″				s. m.
10 0	**19.1281**	44	9.60430	100	**0 50**
10	237	44	0530	100	50
20	193	44	0630	100	40
30	149	44	0730	99	30
40	105	44	0829	99	20
50	061	45	0928	99	10
11 0	**19.1016**	44	1027	98	**0 49**
10	**19.0972**	45	1125	99	50
20	927	45	1224	98	40
30	882	44	1322	98	30
40	838	45	1420	97	20
50	793	45	1517	97	10
12 0	748	45	1614	97	**0 48**
10	703	46	1711	97	50
20	657	45	1808	97	40
30	612	45	1905	96	30
40	567	46	2001	96	20
50	521	46	2097	96	10
13 0	475	45	2193	96	**0 47**
10	430	46	2289	95	50
20	384	46	2384	96	40
30	338	46	2480	95	30
40	292	46	2575	94	20
50	246	46	2669	95	10
14 0	200	47	2764	94	**0 46**
10	153	46	2858	94	50
20	107	47	2952	94	40
30	060	47	3046	94	30
40	**19.0013**	46	3140	93	20
50	**18.9967**	47	3233	93	10
15 0	920	47	3326	93	**0 45**
10	873	47	3419	93	50
20	826	47	3512	93	40
30	779	47	3604	92	30
40	732	47	3696	92	20
50	684	48	3789	93	10
16 0	637	47	3880	91	**0 44**
10	589	48	3972	92	50
20	532	47	4063	91	40
30	494	48	4155	92	30
40	446	48	4246	91	20
50	398	48	4336	90	10
17 0	350	48	4427	91	**0 43**
10	302	48	4517	90	50
20	254	48	4607	90	40
30	205	49	4697	90	30
40	157	48	4787	90	20
50	109	48	4876	89	10
18 0	060	49	4966	90	**0 42**
10	**18.9011**	49	5055	89	50
20	**18.8962**	49	5144	89	40
30	913	49	5232	88	30
40	864	49	5321	89	20
50	815	49	5409	88	10
19 0	766	49	5497	88	**0 41**
10	717	49	5585	88	50
20	667	50	5673	88	40
30	618	49	5760	87	30
40	568	50	5847	87	20
50	518	50	5934	87	10
20 0	**18.8469**	49	9.66021	87	**0 40**

α	$\Delta_0\delta$		$log\ (\Delta_0\alpha)$		α
m. s.	″				s. m.
20 0	**18.8469**	50	9.66021	87	**0 40**
10	419	50	6108	86	50
20	369	51	6194	87	40
30	318	50	6281	86	30
40	268	50	6367	86	20
50	218	51	6453	85	10
21 0	167	50	6538	86	**0 39**
10	117	51	6624	85	50
20	066	50	6709	85	40
30	**18.8016**	51	6794	85	30
40	**18.7965**	51	6879	85	20
50	914	51	6964	85	10
22 0	863	51	7049	84	**0 38**
10	812	52	7133	84	50
20	760	51	7217	84	40
30	709	51	7301	84	30
40	658	52	7385	84	20
50	606	52	7469	83	10
23 0	554	51	7552	83	**0 37**
10	503	52	7635	83	50
20	451	52	7718	83	40
30	399	52	7801	83	30
40	347	52	7884	83	20
50	295	52	7967	83	10
24 0	243	53	8049	82	**0 36**
10	190	53	8131	82	50
20	138	53	8213	82	40
30	085	53	8295	82	30
40	**18.7033**	53	8377	82	20
50	**18.6980**	53	8458	81	10
25 0	927	53	8540	82	**0 35**
10	874	53	8621	81	50
20	821	53	8702	81	40
30	768	53	8782	80	30
40	715	53	8863	81	20
50	662	53	8943	80	10
26 0	608	54	9024	81	**0 34**
10	555	53	9104	80	50
20	501	54	9184	80	40
30	447	54	9263	79	30
40	394	53	9343	80	20
50	340	54	9422	79	10
27 0	286	54	9502	80	**0 33**
10	232	54	9581	79	50
20	178	54	9660	79	40
30	123	55	9738	78	30
40	069	54	9817	79	20
50	**18.6014**	55	9895	78	10
28 0	**18 5960**	54	9.69974	79	**0 32**
10	905	55	9.70052	78	50
20	850	55	0130	78	40
30	795	55	0207	77	30
40	740	55	0285	78	20
50	685	55	0363	78	10
29 0	630	55	0440	77	**0 31**
10	575	55	0517	77	50
20	519	56	0594	77	40
30	464	55	0671	77	30
40	408	56	0747	76	20
50	353	55	0824	77	10
30 0	**18.5297**	56	9.70900	76	**0 30**

10h. $\Delta\delta-$, $\Delta\alpha+$ **22h.** $\Delta\delta+$, $\Delta\alpha-$ **Xh, XXIIh.**

TABLE X—CONTINUED. ANNUAL PRECESSIONS, 1850.

1h, XIIIh. **1h.** $\Delta\delta+, \Delta\alpha+$ **13h.** $\Delta\delta-, \Delta\alpha-$

α	$\Delta_0\delta$		$\log(\Delta_0\alpha)$		α	α	$\Delta_0\delta$		$\log(\Delta_0\alpha)$		α	α	$\Delta_0\delta$		$\log(\Delta_0\alpha)$		α
m. s.	″				s. m.	m. s.	″				s. m.	m. s.	″				s. m.
30 0	**18.5297**		**9.70900**		**0 30**	**40 0**	**18.1773**		**9.752110**		**0 20**	**50 0**	**17.7902**		**9.790567**		**0 10**
		56		76				62		677				67		607	
10	241	56	0976	76	50	10	711	62	2787	675	50	10	835	67	1174	605	50
20	185	56	1052	76	40	20	649	62	3462	674	40	20	768	67	1779	604	40
30	129	56	1128	76	30	30	587	62	4136	673	30	30	700	68	2383	603	30
40	073	56	1204	75	20	40	525	62	4809	671	20	40	632	67	2986	601	20
50	**18.5017**	56	1279	76	10	50	463	62	5480	671	10	50	565	68	3587	601	10
31 0	**18.4960**	57	1355	75	**0 29**	**41 0**	401	62	6151	669	**0 19**	**51 0**	497	68	4188	600	**0 9**
10	904	56	1430	75	50	10	339	62	6820	668	50	10	429	68	4788	599	50
20	847	57	1505	75	40	20	276	63	7488	666	40	20	361	68	5387	597	40
30	791	56	1580	75	30	30	214	62	8154	665	30	30	292	69	5984	597	30
40	734	57	1655	75	20	40	151	63	8819	664	20	40	224	68	6581	596	20
50	677	57	1729	74	10	50	089	62	**9.759483**	663	10	50	156	68	7177	594	10
32 0	620	57	1804	75	**0 28**	**42 0**	**18.1026**	63	**9.760146**	662	**0 18**	**52 0**	087	69	7771	594	**0 8**
10	563	57	1878	74	50	10	**18.0963**	63	0808	660	50	10	**17.7019**	68	8365	592	50
20	506	57	1952	74	40	20	900	63	1468	659	40	20	**17.6950**	69	8957	591	40
30	449	57	2027	75	30	30	837	63	2127	658	30	30	882	69	**9.799548**	591	30
40	391	58	2100	73	20	40	774	63	2785	656	20	40	813	69	**9.800139**	589	20
50	334	57	2174	74	10	50	711	66	3441	656	10	50	744	69	0728	588	10
33 0	276	58	2248	74	**0 27**	**43 0**	648	63	4097	654	**0 17**	**53 0**	675	69	1316	588	**0 7**
10	219	57	2321	73	50	10	584	64	4751	653	50	10	606	69	1904	586	50
20	161	58	2394	73	40	20	521	63	5404	652	40	20	537	69	2490	585	40
40	103	58	2467	73	30	30	457	64	6056	650	30	30	467	70	3075	584	30
30	**18.4045**	58	2541	74	20	40	393	64	6706	650	20	40	398	69	3659	583	20
50	**18.3987**	58	2613	72	10	50	330	63	7356	648	10	50	329	69	4242	583	10
34 0	929	58	2686	73	**0 26**	**44 0**	266	64	8004	647	**0 16**	**54 0**	259	70	4825	581	**0 6**
10	871	58	2759	73	50	10	202	64	8651	645	50	10	189	69	5406	580	50
20	813	58	2831	72	40	20	138	64	9296	645	40	20	120	70	5986	579	40
30	754	59	2903	72	30	30	073	65	**9.769941**	643	30	30	**17.6050**	70	6565	578	30
40	696	58	2976	73	20	40	**18.0009**	64	**9.770584**	643	20	40	**17.5980**	70	7143	578	20
50	637	59	3048	72	10	50	**17.9945**	64	1227	641	10	50	910	70	7721	578	10
35 0	578	59	3119	71	**0 25**	**45 0**	880	65	1868	639	**0 15**	**55 0**	840	70	8297	576	**0 5**
10	520	58	3191	72	50	10	816	64	2507	639	50	10	770	71	8872	575	50
20	461	59	3263	72	40	20	751	65	3146	638	40	20	699	70	**9.809446**	574	40
30	402	59	3334	71	30	30	686	65	3784	636	30	30	629	71	**9.810019**	573	30
40	343	59	3405	71	20	40	622	64	4420	635	20	40	558	70	0591	572	20
50	284	59	3476	71	10	50	557	65	5055	634	10	50	488	71	1163	572	10
36 0	224	60	3547	71	**0 24**	**46 0**	492	65	5689	633	**0 14**	**56 0**	417	70	1733	569	**0 4**
10	165	59	3618	71	50	10	427	66	6322	632	50	10	347	71	2302	569	50
20	106	59	3689	71	40	20	361	65	6954	630	40	20	276	71	2871	567	40
30	**18.3046**	60	3760	71	30	30	296	66	7584	630	30	30	205	71	3438	566	30
40	**18.2986**	60	3830	70	20	40	230	65	8214	628	20	40	134	71	4004	566	20
50	927	59	3900	70	10	50	165	66	8842	627	10	50	**17.5063**	72	4570	564	10
37 0	867	60	3971	71	**0 23**	**47 0**	099	65	**9.779469**	626	**0 13**	**57 0**	**17.4991**	71	5134	564	**0 3**
10	807	60	4041	70	50	10	**17.9034**	66	**9.780095**	625	50	10	920	71	5698	562	50
20	747	60	4111	70	40	20	**17.8968**	66	0720	624	40	20	849	72	6260	562	40
30	686	61	4180	69	30	30	902	66	1344	623	30	30	777	71	6822	560	30
40	626	60	4250	70	20	40	836	66	1967	621	20	40	706	72	7382	560	20
50	566	60	4320	70	10	50	770	66	2588	621	10	50	634	72	7942	559	10
38 0	505	61	4389	69	**0 22**	**48 0**	704	66	3209	619	**0 12**	**58 0**	562	72	8501	557	**0 2**
10	445	60	4458	69	50	10	638	67	3828	618	50	10	490	72	9058	557	50
20	384	61	4527	69	40	20	571	66	4446	617	40	20	418	72	**9.819615**	556	40
30	323	61	4596	69	30	30	505	67	5063	616	30	30	346	72	**9.820171**	555	30
40	263	60	4665	69	20	40	438	66	5679	615	20	40	274	72	0726	554	20
50	202	61	4734	69	10	50	372	67	6294	614	10	50	202	73	1280	553	10
39 0	141	61	4802	68	**0 21**	**49 0**	305	67	6908	612	**0 11**	**59 0**	129	72	1833	552	**0 1**
10	080	61	4871	69	50	10	238	67	7520	612	50	10	**17.4057**	72	2385	551	50
20	**18.2018**	62	4939	68	40	20	171	67	8132	610	40	20	**17.3985**	73	2936	551	40
30	**18.1957**	61	5007	68	30	30	104	67	8742	610	30	30	912	73	3487	549	30
40	896	61	5075	68	20	40	**17.8037**	67	9352	608	20	40	839	73	4036	548	20
50	834	62	5143	68	10	50	**17.7970**	68	**9.789960**	607	10	50	766	73	4584	548	10
		61		68													
40 0	**18.1773**		**9.75211**		**0 20**	**50 0**	**17.7902**		**9.790567**		**0 10**	**60 0**	**17.3693**		**9.825132**		**0 0**

10h. $\Delta\delta-, \Delta\alpha+$ **22h.** $\Delta\delta+, \Delta\alpha-$ **Xh, XXIIh.**

TABLE X—Continued. ANNUAL PRECESSIONS, 1850.

11h, XIV*h*. **2h. $\Delta\delta+$, $\Delta\alpha+$** **14h. $\Delta\delta-$, $\Delta\alpha-$**

α	$\Delta_0\delta$		$log\,(\Delta_0\alpha)$		α
m. s.	″				s. m.
0 0	17.3693	73	9.825132	546	0 60
10	620	73	5678	546	50
20	547	73	6224	545	40
30	474	73	6769	543	30
40	401	73	7312	543	20
50	328	74	7855	542	10
1 0	254	73	8397	542	0 59
10	181	74	8939	540	50
20	107	74	9.829479	539	40
30	17.3033	73	9.830018	538	30
40	17.2960	74	0556	538	20
50	886	74	1094	537	10
2 0	812	74	1631	537	0 58
10	738	74	2166	535	50
20	664	74	2701	535	40
30	589	75	3235	534	30
40	515	74	3768	533	20
50	440	75	4300	532	10
3 0	366	74	4832	532	0 57
10	291	75	5362	530	50
20	217	75	5892	530	40
30	142	75	6420	528	30
40	17.2067	75	6948	528	20
50	17.1992	75	7475	527	10
4 0	917	75	8001	526	0 56
10	842	75	8526	525	50
20	766	76	9051	525	40
30	691	75	9.839574	523	30
40	616	76	9.840097	523	20
50	540	76	0618	521	10
5 0	465	75	1139	521	0 55
10	389	76	1659	520	50
20	313	76	2179	518	40
30	237	76	2697	518	30
40	161	76	3214	517	20
50	085	76	3731	516	10
6 0	17.1009	76	4247	516	0 54
10	17.0933	76	4762	514	50
20	856	77	5276	514	40
30	780	76	5789	513	30
40	703	77	6302	513	20
50	627	76	6813	511	10
7 0	550	77	7324	511	0 53
10	473	77	7834	510	50
20	396	77	8343	509	40
30	319	77	8851	508	30
40	242	77	9359	508	20
50	165	77	9.849866	507	10
8 0	088	77	9.850371	505	0 52
10	17.0011	78	0876	505	50
20	16.9933	77	1381	505	40
30	856	78	1884	503	30
40	778	78	2387	503	20
50	700	77	2888	501	10
9 0	623	78	3389	501	0 51
10	545	78	3889	500	50
20	467	78	4389	500	40
30	389	78	4887	498	30
40	311	79	5385	498	20
50	232	78	5882	497	10
10 0	16.9154		9.856378	496	0 50

α	$\Delta_0\delta$		$log\,(\Delta_0\alpha)$		α
m. s.	″				s. m.
10 0	16.9154	79	9.856378	496	0 50
10	075	78	6874	494	50
20	16.8997	79	7368	494	40
30	918	78	7862	493	30
40	840	78	8355	492	20
50	761	79	8847	491	10
11 0	682	79	9338	491	0 49
10	603	79	9.859829	490	50
20	524	79	9.860319	489	40
30	445	79	0808	488	30
40	366	79	1296	488	20
52	286	79	1784	486	10
12 0	207	80	2270	486	0 48
10	127	79	2756	486	50
20	16.8048	79	3242	484	40
30	16.7968	79	3726	484	30
40	889	79	4210	483	20
50	809	80	4693	482	10
13 0	729	80	5175	482	0 47
10	649	79	5656	481	50
20	569	80	6137	479	40
30	489	81	6616	479	30
40	408	80	7095	479	20
50	328	80	7574	477	10
14 0	248	81	8051	477	0 46
10	167	81	8528	476	50
20	086	81	9004	475	40
30	16.7006	80	9479	475	30
40	16.6925	81	9.869954	474	20
50	844	81	9.870428	473	10
15 0	763	81	0901	473	0 45
10	682	81	1373	472	50
20	601	82	1844	471	40
30	519	81	2315	471	30
40	438	82	2785	470	20
50	357	81	3255	470	10
16 0	275	82	3723	468	0 44
10	193	82	4191	468	50
20	112	81	4658	467	40
30	16.6030	82	5125	467	30
40	16.5948	82	5590	465	20
50	866	82	6055	465	10
17 0	784	82	6520	465	0 43
10	702	82	6983	463	50
20	620	82	7446	463	40
30	537	83	7908	462	30
40	455	82	8369	461	20
50	373	82	8830	461	10
18 0	290	83	9.879290	460	0 42
10	207	82	9.879749	459	50
20	125	83	0207	458	40
30	16.5042	82	0665	458	30
40	16.4959	83	1122	457	20
50	876	83	1579	457	10
19 0	793	83	2034	455	0 41
10	710	84	2489	455	50
20	626	83	2943	454	40
30	543	83	3397	454	30
40	460	84	3850	453	20
50	376	84	4302	452	10
20 0	16.4292		9.884753	451	0 40

α	$\Delta_0\delta$		$log\,(\Delta_0\alpha)$		α
m. s.	″				s. m.
20 0	16.4292	83	9.884753	451	0 40
10	209	84	5204	450	50
20	125	84	5654	449	40
30	16.4041	84	6103	449	30
40	16.3957	84	6552	449	20
50	873	84	7000	448	10
21 0	789	84	7447	447	0 39
10	705	85	7893	446	50
20	620	84	8339	446	40
30	536	84	8784	445	30
40	452	85	9229	445	20
50	367	85	9.889673	444	10
22 0	282	85	9.890116	443	0 38
10	198	85	0558	442	50
20	113	85	1000	442	40
30	16.3028	85	1441	441	30
40	16.2943	85	1881	440	20
50	858	86	2321	440	10
23 0	772	85	2760	439	0 37
10	687	85	3198	438	50
20	602	86	3636	438	40
30	516	85	4073	437	30
40	431	85	4510	437	20
50	346	86	4945	435	10
24 0	260	86	5380	435	0 36
10	174	86	5815	435	50
20	088	86	6249	434	40
30	16.2002	86	6682	433	30
40	16.1916	86	7114	432	20
50	830	86	7546	432	10
25 0	744	86	7977	431	0 35
10	657	87	8407	430	50
20	571	86	8837	430	40
30	485	86	9266	429	30
40	398	87	9.899694	428	20
50	311	87	9.900122	428	10
26 0	225	86	0549	427	0 34
10	138	87	0976	427	50
20	16.1051	87	1402	426	40
30	16.0964	87	1827	425	30
40	877	87	2251	424	20
50	790	87	2675	424	10
27 0	703	87	3099	424	0 33
10	615	88	3521	422	50
20	528	87	3943	422	40
30	440	87	4365	422	30
40	353	87	4785	420	20
50	265	88	5205	420	10
28 0	177	87	5625	420	0 32
10	090	87	6044	419	50
20	16.0002	88	6462	418	40
30	15.9914	88	6879	417	30
40	826	88	7296	417	20
50	738	88	7712	416	10
29 0	649	89	8128	416	0 31
10	561	88	8543	415	50
20	473	89	8958	415	40
30	384	89	9371	413	30
40	296	88	9.909784	413	20
50	207	89	9.910197	413	10
30 0	15.9118		9.910609	412	0 30

9h. $\Delta\delta-$, $\Delta\alpha+$ **21h. $\Delta\delta+$, $\Delta\alpha-$** **IX*h*, XX*h*.**

TABLE X—Continued. ANNUAL PRECESSIONS, 1850.

11h, XIVh. **2h. Δδ +, Δα +** **14h. Δδ —, Δα —**

a	$\Delta_0\delta$		log ($\Delta_0\alpha$)		a
m. s.	"				s. m.
30 0	**15.9118**		**9.910609**		**0 30**
		89		411	
10	**15.9029**	89	1020	411	50
20	**15.8940**	89	1431	411	40
30	851	89	1841	410	30
40	762	89	2250	409	20
50	673	89	2659	409	10
31 0	584	89	3067	408	**0 29**
		89		408	
10	495	90	3475	407	50
20	405	89	3882	406	40
30	316	90	4288	406	30
40	226	90	4694	406	20
50	136	89	5099	405	10
32 0	**15.8047**	90	5504	405	**0 28**
10	**15.7957**	90	5908	404	50
20	867	90	6311	403	40
30	777	90	6714	403	30
40	687	90	7116	402	20
50	597	90	7517	401	10
33 0	506	91	7918	401	**0 27**
10	416	90	8319	401	50
20	325	91	8718	399	40
30	235	90	9117	399	30
40	144	91	9516	399	20
50	**15.7054**	90	**9.919914**	398	10
34 0	**15.6963**	91	**9.920311**	397	**0 26**
10	872	91	0708	397	50
20	781	91	1104	396	40
30	690	91	1500	396	30
40	599	91	1895	395	20
50	508	91	2289	394	10
35 0	417	91	2683	394	**0 25**
10	325	92	3076	393	50
20	234	91	3469	393	40
30	142	92	3861	392	30
40	**15.6051**	91	4252	391	20
50	**15.5959**	92	4643	391	10
36 0	868	91	5033	390	**0 24**
10	776	92	5423	390	50
20	684	92	5812	389	40
30	592	92	6201	389	30
40	500	92	6589	388	20
50	408	92	6976	387	10
37 0	315	93	7363	387	**0 23**
10	223	92	7749	386	50
20	131	92	8135	386	40
30	**15.5038**	93	8520	385	30
40	**15.4946**	92	8905	385	20
50	853	93	9289	384	10
38 0	760	93	**9.929672**	383	**0 22**
10	667	93	**9.930055**	383	50
20	574	93	0437	382	40
30	481	93	0819	382	30
40	388	93	1200	381	20
50	295	93	1581	381	10
39 0	202	93	1961	380	**0 21**
10	109	93	2340	379	50
20	**15 4015**	94	2719	379	40
30	**15.3922**	93	3097	378	30
40	828	94	3475	378	20
50	735	93	3852	377	10
		94		377	
40 0	**15.3641**		**9.934229**		**0 20**

a	$\Delta_0\delta$		log ($\Delta_0\alpha$)		a
m. s.	"				s. m.
40 0	**15.3641**		**9.934229**		**0 20**
		94		376	
10	547	94	4605	376	50
20	453	94	4981	375	40
30	359	94	5356	374	30
40	265	94	5730	374	20
50	171	94	6104	373	10
41 0	**15.3077**	94	6477	373	**0 19**
10	**15.2983**	95	6850	372	50
20	888	94	7222	372	40
30	794	95	7594	372	30
40	699	94	7966	370	20
50	605	95	8336	370	10
42 0	510	95	8706	370	**0 18**
10	415	95	9076	369	50
20	320	94	9445	368	40
30	226	95	**9.939813**	368	30
40	131	96	**9.940181**	367	20
50	**15.2035**	95	0548	367	10
43 0	**15.1940**	95	0915	366	**0 17**
10	845	95	1281	366	50
20	750	96	1647	365	40
30	654	95	2012	365	30
40	559	96	2377	364	20
50	463	95	2741	364	10
44 0	368	96	3105	363	**0 16**
10	272	96	3468	362	50
20	176	96	3830	362	40
30	**15.1080**	96	4192	362	30
40	**15.0984**	96	4554	361	20
50	888	96	4915	360	10
45 0	792	96	5275	360	**0 15**
10	696	97	5635	359	50
20	599	96	5994	359	40
30	503	96	6353	358	30
40	407	97	6711	358	20
50	310	96	7069	357	10
46 0	214	97	7426	357	**0 14**
10	117	97	7783	356	50
20	**15.0020**	97	8139	356	40
30	**14.9923**	97	8495	355	30
40	826	97	8850	355	20
50	729	97	9205	355	10
47 0	632	97	9559	354	**0 13**
10	535	97	**9.949912**	353	50
20	438	97	**9.950265**	353	40
30	341	98	0618	352	30
40	243	97	0970	352	20
50	146	98	1322	351	10
48 0	**14.9048**	97	1673	350	**0 12**
10	**14.8951**	98	2023	350	50
20	853	98	2373	350	40
30	755	98	2723	349	30
40	657	98	3072	348	20
50	559	98	3420	348	10
49 0	461	98	3768	347	**0 11**
10	363	98	4115	347	50
20	265	98	4462	347	40
30	167	99	4809	346	30
40	**14.8068**	98	5155	345	20
50	.7970	99	5500	345	10
50 0	**14.7871**		**9.955845**		**0 10**

a	$\Delta_0\delta$		log ($\Delta_0\alpha$)		a
m. s.	"				s. m.
50 0	**14.7871**		**9.955845**		**0 10**
		98		344	
10	773	99	6189	344	50
20	674	99	6533	344	40
30	575	98	6877	343	30
40	477	99	7220	342	20
50	378	99	7562	342	10
51 0	279	100	7904	341	**0 9**
10	179	99	8245	341	50
20	**14.7080**	99	8586	341	40
30	**14.6981**	99	8927	340	30
40	882	99	9267	339	20
50	783	100	9606	339	10
52 0	683	99	**9.959945**	338	**0 8**
10	584	100	**9.960283**	338	50
20	484	100	0621	338	40
30	384	99	0959	337	30
40	285	100	1296	336	20
50	185	100	1632	336	10
53 0	**14.6085**	100	1968	336	**0 7**
10	**14.5985**	100	2304	335	50
20	885	100	2639	334	40
30	785	101	2973	334	30
40	684	100	3307	334	20
50	584	100	3641	333	10
54 0	484	100	3974	333	**0 6**
10	384	101	4307	332	50
20	283	101	4639	331	40
30	182	100	4970	331	30
40	**14.5082**	100	5301	331	20
50	**14.4981**	101	5632	330	10
55 0	880	101	5962	330	**0 5**
10	779	101	6292	329	50
20	678	101	6621	329	40
30	577	101	6950	328	30
40	476	101	7278	328	20
50	375	101	7606	327	10
56 0	274	102	7933	327	**0 4**
10	172	101	8260	326	50
20	**14.4071**	102	8586	326	40
30	**14.3969**	101	8912	325	30
40	868	102	9237	325	20
50	766	102	9562	325	10
57 0	664	101	**9.969887**	324	**0 3**
10	563	102	**9.970211**	323	50
20	461	102	0534	323	40
30	359	102	0857	323	30
40	257	102	1180	322	20
50	155	103	1502	322	10
58 0	**14.3052**	102	1824	321	**0 2**
10	**14.2950**	102	2145	320	50
20	848	103	2465	320	40
30	745	102	2785	320	30
40	643	103	3105	320	20
50	540	102	3424	319	10
59 0	438	103	3743	319	**0 1**
10	335	103	4062	318	50
20	232	103	4380	317	40
30	129	103	4697	317	30
40	**14.2026**	103	6014	317	20
50	**14.1923**	103	5331	316	10
60 0	**14 1820**		**9.975647**		**0 0**

9h. Δδ —, Δα + **21h. Δδ +, Δα —** **IXh. XXIh.**

TABLE X—Continued. ANNUAL PRECESSIONS, 1850.

IIIh, XVh. 3h. $\Delta\delta+$, $\Delta\alpha+$ 15h. $\Delta\delta-$, $\Delta\alpha-$

α	$\Delta_0\delta$		$log\,(\Delta_0\alpha)$		α
m. s.	″				s. m.
0 0	14.1820	103	9.975647	315	0 60
10	717	103	5962	315	50
20	614	104	6277	315	40
30	510	103	6592	314	30
40	407	103	6906	314	20
50	304	104	7220	313	10
1 0	200	104	7533	313	0 59
10	14.1096	103	7846	313	50
20	14.0993	104	8159	312	40
30	889	104	8471	311	30
40	785	104	8782	311	20
50	681	104	9093	311	10
2 0	577	104	9.979404	310	0 58
10	473	104	9.980714	309	50
20	369	104	0023	310	40
30	265	105	0333	309	30
40	160	104	0642	308	20
50	14.0056	104	0950	308	10
3 0	13.9952	105	1258	307	0 57
10	847	104	1565	307	50
20	743	105	1872	307	40
30	638	105	2179	306	30
40	533	105	2485	306	20
50	428	105	2791	305	10
4 0	323	105	3096	305	0 56
10	218	105	3401	304	50
20	113	105	3705	304	40
30	13.9008	105	4009	303	30
40	13.8903	105	4312	303	20
50	798	105	4615	303	10
5 0	693	106	4918	302	0 55
10	587	105	5220	302	50
20	482	106	5522	301	40
30	376	105	5823	301	30
40	271	106	6124	300	20
50	165	106	6424	300	10
6 0	13.8059	106	6724	299	0 54
10	13.7953	106	7023	299	50
20	847	106	7322	299	40
30	741	106	7621	298	30
40	635	106	7919	298	20
50	529	106	8217	297	10
7 0	423	106	8514	297	0 53
10	317	107	8811	297	50
20	210	106	9108	296	40
30	13.7104	106	9404	295	30
40	13 6998	107	9699	295	20
50	891	107	9.989994	295	10
8 0	784	106	9.990289	294	0 52
10	678	107	0583	294	50
20	571	107	0877	294	40
30	464	107	1171	293	30
40	357	107	1464	292	20
50	250	107	1756	292	10
9 0	143	107	2048	292	0 51
10	13.6036	107	2340	292	50
20	13.5929	108	2632	291	40
30	821	107	2923	290	30
40	714	107	3213	290	20
50	607	108	3503	290	10
10 0	13.5499		9.993793		0 50

α	$\Delta_0\delta$		$log\,(\Delta_0\alpha)$		α
m. s.	″				s. m.
10 0	13.5499	107	9.993793	289	0 50
10	392	108	4082	289	50
20	284	108	4371	288	40
30	176	108	4659	288	30
40	13.5068	107	4947	287	20
50	13.4961	108	5234	287	10
11 0	853	108	5521	287	0 49
10	745	109	5808	286	50
20	636	108	6094	286	40
30	528	108	6380	286	30
40	420	108	6666	285	20
50	302	108	6951	284	10
12 0	204	109	7235	284	0 48
10	13.4095	108	7519	284	50
20	13.3987	109	7803	283	40
30	878	109	8086	283	30
40	769	108	8369	283	20
50	661	109	8652	282	10
13 0	552	109	8934	282	0 47
10	443	109	9216	281	50
20	334	109	9497	281	40
30	225	109	9.999778	280	30
40	116	109	0.000058	280	20
50	13.3007	109	0338	280	10
14 0	13.2898	110	0618	279	0 46
10	788	109	0897	279	50
20	679	109	1176	278	40
30	570	110	1454	278	30
40	460	109	1732	278	20
50	351	110	2010	277	10
15 0	241	110	2287	277	0 45
10	131	110	2564	276	50
20	13.2021	109	2840	276	40
30	13.1912	110	3116	276	30
40	802	110	3392	275	20
50	692	110	3667	275	10
16 0	582	110	3942	274	0 44
10	472	110	4216	274	50
20	361	110	4490	273	40
30	251	110	4763	273	30
40	141	110	5036	273	20
50	13.1031	111	5309	273	10
17 0	13.0920	110	5582	272	0 43
10	810	111	5854	271	50
20	699	111	6125	271	40
30	588	110	6396	271	30
40	478	111	6667	270	20
50	367	111	6937	270	10
18 0	256	111	7207	270	0 42
10	145	111	7477	269	50
20	13.0034	111	7746	269	40
30	12.9923	111	8015	268	30
40	812	112	8283	268	20
50	700	111	8551	268	10
19 0	589	111	8819	267	0 41
10	478	112	9086	267	50
20	366	111	9353	266	40
30	255	112	9619	266	30
40	143	111	0.009885	266	20
50	12.9032	112	10151	265	10
20 0	12.8920		0.010416		0 40

α	$\Delta_0\delta$		$log\,(\Delta_0\alpha)$		α
m. s.	″				s. m.
20 0	12.8920	112	0.010416	265	60 40
10	808	112	0681	264	50
20	696	111	0945	264	40
30	585	112	1209	264	30
40	473	113	1473	263	20
50	360	112	1736	263	10
21 0	248	112	1999	263	0 39
10	136	112	2261	262	50
20	12.8024	112	2523	262	40
30	12.7912	113	2785	261	30
40	799	112	3046	261	20
50	687	113	3307	261	10
22 0	574	112	3568	260	0 38
10	462	113	3828	260	50
20	349	113	4088	259	40
30	236	112	4347	259	30
40	124	113	4606	259	20
50	12.7011	113	4865	258	10
23 0	12.6898	113	5123	258	0 37
10	785	113	5381	257	50
20	672	113	5638	257	40
30	559	113	5895	257	30
40	446	114	6152	256	20
50	332	113	6408	256	10
24 0	219	113	6664	256	0 36
10	12.6106	114	6920	255	50
20	12.5992	113	7175	255	40
30	879	114	7430	254	30
40	765	114	7684	254	20
50	651	113	7938	254	10
25 0	538	114	8192	253	0 35
10	424	114	8445	253	50
20	310	114	8698	253	40
30	196	114	5951	252	30
40	12.5082	114	9203	252	20
50	12.4968	114	9455	251	10
26 0	854	114	9706	251	0 34
10	740	114	0.019957	251	50
20	626	115	0.020208	250	40
30	511	114	0458	250	30
40	397	115	0708	250	20
50	282	114	0958	249	10
27 0	168	115	1207	249	0 33
10	12.4053	114	1456	248	50
20	12.3939	115	1704	248	40
30	824	115	1952	248	30
40	709	115	2200	247	20
50	594	114	2447	247	10
28 0	480	115	2694	246	0 32
10	365	115	2940	246	50
20	250	116	3186	246	40
30	134	115	3432	246	30
40	12.3019	115	3678	245	20
50	12.2904	115	3923	245	10
29 0	789	116	4168	244	0 31
10	673	115	4412	244	50
20	558	116	4656	244	40
30	442	115	4900	243	30
40	327	116	5143	243	20
50	211	115	5386	242	10
30 0	12 2096		0.025628		0 30

8h. $\Delta\delta-$, $\Delta\alpha+$ 20h. $\Delta\delta+$, $\Delta\alpha-$ VIIIh, XXh.

TABLE X—Continued. ANNUAL PRECESSIONS, 1850.

11h, XVh. 3h. $\Delta\delta+$, $\Delta\alpha+$ 15h. $\Delta\delta-$, $\Delta\alpha-$

α	$\Delta_0\delta$		$\log(\Delta_0\alpha)$		α	α	$\Delta_0\delta$		$\log(\Delta_0\alpha)$		α	α	$\Delta_0\delta$		$\log(\Delta_0\alpha)$		α
m. s.	″				s. m.	m. s.	″				s. m.	m. s.	″				s. m.
20 0	12.2096	116	0.025628	242	0 30	40 0	11.5039	120	0.039526	221	0 20	50 0	10.7763	123	0.052191	201	0 10
10	12.1980	116	5870	242	50	10	11.4919	120	9747	221	50	10	640	123	2392	201	50
20	864	116	6112	242	40	20	799	119	0.039968	220	40	20	517	123	2593	200	40
30	748	116	6354	241	30	30	680	120	0.040188	220	30	30	394	123	2793	200	30
40	632	116	6595	241	20	40	560	119	0408	220	20	40	270	124	2993	200	20
50	516	116	6836	240	10	50	441	120	0628	219	10	50	147	123	3193	199	10
31 0	400	116	7076	240	0 29	41 0	321	120	0847	219	0 19	51 0	10.7024	124	3392	199	0 9
10	284	116	7316	240	50	10	201	120	1066	219	50	10	10.6900	123	3591	199	50
20	168	116	7556	239	40	20	11.4081	120	1285	218	40	20	777	124	3790	199	40
30	12.1052	117	7795	239	30	30	11.3961	120	1503	218	30	30	653	124	3989	198	30
40	12.0935	116	8034	238	20	40	841	120	1721	217	20	40	530	123	4187	198	20
50	819	117	8272	238	10	50	721	120	1938	217	10	50	406	124	4385	197	10
32 0	702	116	8510	238	0 28	42 0	601	121	2155	217	0 18	52 0	283	123	4582	197	0 8
10	586	117	8748	238	50	10	480	120	2372	217	50	10	159	124	4779	197	50
20	469	116	8986	237	40	20	360	120	2589	216	40	20	10.6035	124	4976	197	40
30	353	117	9223	236	30	30	240	121	2805	216	30	30	10.5911	124	5173	196	30
40	236	117	9459	237	20	40	11.3119	120	3021	216	20	40	788	123	5369	196	20
50	119	117	9696	236	10	50	11.2999	120	3237	215	10	50	664	124	5565	196	10
33 0	12.0002	116	0.029932	236	0 27	43 0	878	120	3452	215	0 17	53 0	540	124	5761	195	0 7
10	11.9886	117	0.030168	235	50	10	758	121	3667	214	50	10	415	125	5956	195	50
20	769	117	0403	235	40	20	537	120	3881	214	40	20	291	124	6151	195	40
30	652	118	0638	234	30	30	517	121	4095	214	30	30	167	124	6345	194	30
40	534	117	0872	234	20	40	396	121	4309	214	20	40	10.5043	124	6540	194	20
50	417	117	1106	234	10	50	275	121	4523	213	10	50	10.4919	124	6734	194	10
34 0	300	117	1340	234	0 26	44 0	154	121	4736	213	0 16	54 0	794	125	6928	193	0 6
10	183	118	1574	233	50	10	11.2033	121	4949	212	50	10	670	124	7121	193	50
20	11.9065	117	1807	233	40	20	11.1912	121	5161	212	40	20	545	125	7314	193	40
30	11.8948	117	2040	232	30	30	791	121	5373	212	30	30	421	124	7507	192	30
40	831	118	2272	232	20	40	670	121	5585	212	20	40	296	125	7699	192	20
50	713	118	2504	232	10	50	549	121	5797	212	10	50	172	124	7891	192	10
35 0	595	117	2736	232	0 25	45 0	427	122	6008	211	0 15	55 0	10.4047	125	8083	192	0 5
10	478	118	2968	231	50	10	306	121	6219	211	50	10	10.3922	125	8275	191	50
20	360	118	3199	230	40	20	185	122	6430	210	40	20	798	124	8466	191	40
30	242	118	3429	231	30	30	11.1063	121	6640	210	30	30	673	125	8657	190	30
40	124	118	3660	230	20	40	11.0942	122	6850	209	20	40	548	125	8847	190	20
50	11.8006	118	3890	229	10	50	820	121	7059	209	10	50	423	125	9037	190	10
36 0	11.7888	118	4119	230	0 24	46 0	699	122	7268	209	0 14	56 0	298	125	9227	190	0 4
10	770	118	4349	229	50	10	577	122	7477	209	50	10	173	125	9417	189	50
20	652	118	4578	228	40	20	455	121	7686	208	40	20	10.3048	125	9606	189	40
30	534	118	4806	228	30	30	334	122	7894	208	30	30	10.2923	125	9795	189	30
40	416	118	5034	228	20	40	212	122	8102	208	20	40	797	126	0.059984	188	20
50	298	118	5262	228	10	50	11.0090	122	8309	207	10	50	672	125	0.060172	188	10
37 0	179	119	5490	227	0 23	47 0	10.9968	122	8517	207	0 13	57 0	547	125	0360	188	0 3
10	11.7061	118	5717	227	50	10	846	122	8724	206	50	10	422	125	0548	188	50
20	11.6942	119	5944	226	40	20	724	122	8930	206	40	20	296	126	0736	187	40
30	824	118	6170	226	30	30	602	122	9136	206	30	30	171	125	0923	187	30
40	705	119	6396	226	20	40	480	122	9342	206	20	40	10.2045	125	1109	186	20
50	587	118	6622	226	10	50	357	123	9548	206	10	50	10.1919	126	1296	186	10
38 0	468	119	6848	225	0 22	48 0	235	122	9753	205	0 12	58 0	794	125	1482	186	0 2
10	349	119	7073	225	50	10	10.9113	123	0.049958	205	50	10	668	126	1668	186	50
20	230	119	7298	224	40	20	10.8990	122	0.050163	204	40	20	542	126	1854	185	40
30	11.6112	118	7522	224	30	30	868	123	0367	204	30	30	417	125	2039	185	30
40	11.5993	119	7746	224	20	40	745	122	0571	204	20	40	291	126	2224	185	20
50	874	119	7970	224	10	50	623	123	0775	203	10	50	165	126	2408	184	10
39 0	755	120	8193	223	0 21	49 0	500	123	0978	203	0 11	59 0	10.1039	126	2593	184	0 1
10	635	119	8416	223	50	10	377	123	1181	203	50	10	10.0913	126	2777	184	50
20	516	119	8639	222	40	20	254	123	1384	202	40	20	787	126	2961	183	40
30	397	119	8861	222	30	30	132	123	1586	202	30	30	661	126	3144	183	30
40	278	119	9083	222	20	40	10.8009	123	1788	202	20	40	534	127	3327	183	20
50	158	120	9305	222	10	50	.7886	123	1990	202	10	50	408	126	3510	182	10
40 0	11.5039	119	0.039526	221	0 20	50 0	10.7763	123	0.052191	201	0 10	60 0	10.0282	126	0.063692	182	0 0

8h $\Delta\delta-$, $\Delta\alpha+$ 20h $\Delta\delta+$, $\Delta\alpha-$ VIIIh, XXh.

TABLE X.—Continued. ANNUAL PRECESSIONS, 1850.

IV*h*, XVI*h*. **4*h*. $\Delta\delta+$, $\Delta a+$** **16*h*. $\Delta\delta-$, $\Delta a-$**

a	$\Delta_0\delta$		$log\,(\Delta_0 a)$		a
m. s.	″				s. m.
0 0	**10.0282**	126	**0.063692**	152	**0 60**
10	156	127	3874	152	50
20	**10.0029**	126	4056	152	40
30	**9.9903**	127	4238	151	30
40	776	127	4419	151	20
50	650	126	4600	151	10
1 0	523	127	4781	150	**0 59**
10	396	126	4961	150	50
20	270	127	5141	150	40
30	143	127	5321	150	30
40	**9.9016**	127	5500	149	20
50	**9.8889**	127	5679	149	10
2 0	762	127	5858	149	**0 58**
10	635	127	6037	148	50
20	508	127	6215	148	40
30	381	127	6393	148	30
40	254	127	6571	147	20
50	127	127	6748	147	10
3 0	**9.8000**	127	6925	147	**0 57**
10	**9.7872**	127	7102	146	50
20	745	127	7278	146	40
30	618	127	7454	146	30
40	490	128	7630	146	20
50	363	127	7806	146	10
4 0	235	128	7981	145	**0 56**
10	**9.7108**	127	8156	145	50
20	**9.6980**	128	8331	144	40
30	852	128	8505	144	30
40	725	127	8679	144	20
50	597	128	8853	143	10
5 0	469	128	9026	143	**0 55**
10	341	128	9199	143	50
20	213	128	9372	143	40
30	**9.6085**	128	9545	142	30
40	**9.5957**	128	9717	142	20
50	829	128	**0.069889**	141	10
6 0	701	128	**0.070060**	142	**0 54**
10	573	128	0232	141	50
20	444	129	0403	140	40
30	316	128	0573	141	30
40	188	128	0744	140	20
50	**9.5059**	129	0914	140	10
7 0	**9.4931**	128	1084	140	**0 53**
10	802	129	1254	139	50
20	674	128	1423	138	40
30	545	129	1291	138	30
40	417	128	1760	139	20
50	288	129	1929	139	10
8 0	159	129	2097	138	**0 52**
10	**9.4030**	129	2264	137	50
20	**9.3901**	129	2432	138	40
30	772	129	2599	137	30
40	643	129	2766	137	20
50	514	129	2933	137	10
9 0	385	129	3099	136	**0 51**
10	**9.3256**	129	3265	136	50
20	**9.2127**	129	3431	136	40
30	998	129	3596	135	30
40	869	129	3761	135	22
50	739	130	3926	135	10
10 0	**9.2610**	129	**0.074091**	135	**0 50**

a	$\Delta_0\delta$		$log\,(\Delta_0 a)$		a
m. s.	″				s. m.
10 0	**9.2610**	129	**0.074091**	135	**0 50**
10	481	130	4255	134	50
20	351	129	4419	134	40
30	222	130	4583	133	30
40	**9.2092**	129	4746	133	20
50	**9.1963**	130	4909	133	10
11 0	833	130	5072	132	**0 49**
10	703	129	5234	133	50
20	574	130	5397	132	40
30	444	130	5559	131	30
40	314	130	5720	132	20
50	184	130	5882	131	10
12 0	**9.1054**	130	6043	131	**0 48**
10	**9.0924**	130	6204	130	50
20	794	130	6364	130	40
30	664	130	6524	130	30
40	534	130	6684	130	20
50	404	131	6844	129	10
13 0	273	130	7003	129	**0 47**
10	143	130	7162	129	50
20	**9.0013**	131	7321	128	40
30	**8.9882**	130	7479	128	30
40	752	130	7637	128	20
50	622	131	7795	128	10
14 0	491	130	7953	127	**0 46**
10	361	131	8110	127	50
20	230	131	8267	127	40
30	**8.9099**	130	8424	127	30
40	**8.8969**	131	8581	126	20
50	838	131	8737	126	10
15 0	707	131	8893	125	**0 45**
10	576	131	9048	126	50
20	445	130	9204	125	40
30	315	131	9359	124	30
40	184	131	9513	125	20
50	**8.8053**	132	9668	124	10
16 0	**8.7921**	131	9822	124	**0 44**
10	790	131	**0.079976**	123	50
20	659	131	**0.080129**	124	40
30	528	131	0283	123	30
40	397	132	0436	123	20
50	265	131	0589	122	10
17 0	134	131	0741	122	**0 43**
10	**8.7003**	132	0893	122	50
20	**8.6871**	131	1045	122	40
30	740	132	1197	121	30
40	608	132	1348	121	20
50	476	131	1499	121	10
18 0	345	132	1650	120	**0 42**
10	213	132	1800	120	50
20	**8.6081**	131	1950	120	40
30	**8.5950**	132	2100	119	30
40	618	132	2250	120	20
50	486	132	2400	119	10
19 0	554	132	2549	119	**0 41**
10	422	132	2698	118	50
20	290	132	2846	118	40
30	158	132	2994	118	30
40	**8.5026**	132	3142	118	20
50	.4894	132	3290	118	10
20 0	**8.4762**	132	**0.083437**	117	**0 40**

a	$\Delta_0\delta$		$log\,(\Delta_0 a)$		a
m. s.	″				s. m.
20 0	**8.4762**	132	**0.083437**	117	**0 40**
10	630	133	3584	117	50
20	497	132	3731	117	40
30	365	132	3878	116	30
40	233	133	4024	116	20
50	**8.4100**	133	4170	116	10
21 0	**8.3968**	132	4316	116	**0 39**
10	836	133	4462	115	50
20	703	133	4607	115	40
30	570	132	4752	114	30
40	438	133	4896	115	20
50	305	132	5041	114	10
22 0	173	133	5185	113	**0 38**
10	**8.3040**	133	5328	114	50
20	**8.2907**	133	5472	113	40
30	774	133	5615	113	30
40	641	133	5758	113	20
50	508	133	5901	112	10
23 0	375	133	6043	112	**0 37**
10	242	133	6185	112	50
20	**8.2109**	133	6327	112	40
30	**8.1976**	133	6469	111	30
40	843	133	6610	111	20
50	710	133	6751	111	10
24 0	577	133	6892	110	**0 36**
10	444	134	7032	111	50
20	310	133	7173	110	40
30	177	133	7313	110	30
40	**8.1043**	133	7453	109	20
50	**8.0910**	134	7592	109	10
25 0	776	133	7731	108	**0 35**
10	643	134	7869	109	50
20	509	133	8008	108	40
30	376	134	8146	108	30
40	242	134	8284	108	20
50	**8.0108**	133	8422	108	10
26 0	**7.9975**	134	8560	107	**0 34**
10	841	131	8697	107	50
20	707	134	8834	106	40
30	573	134	8970	107	30
40	439	134	9107	106	20
50	305	134	9243	106	10
27 0	171	134	9379	105	**0 33**
10	**7.9037**	134	9514	105	50
20	**7.8903**	134	9649	105	40
30	769	134	9784	105	30
40	635	134	**0.089919**	105	20
50	501	134	**0.090054**	104	10
28 0	367	134	0188	104	**0 32**
10	232	135	0322	104	50
20	**7.8098**	134	0455	103	40
30	**7.7964**	134	0589	104	30
40	829	135	0722	103	20
50	695	134	0855	103	10
29 0	560	135	0987	102	**0 31**
10	426	134	1120	103	50
20	291	135	1252	102	40
30	157	134	1383	101	30
40	**7.7022**	135	1515	102	20
50	.6887	135	1646	101	10
30 0	**7.6753**	134	**0.091777**	101	**0 30**

7*h*. $\Delta\delta-$, $\Delta a+$ **19*h*. $\Delta\delta+$, $\Delta a-$** **VIII*h*, XIX*h***

TABLE X—Continued. ANNUAL PRECESSIONS, 1850.

IV*h*, XVI*h*. 4*h*. $\Delta\delta +, \Delta\alpha +$ 16*h*. $\Delta\delta -, \Delta\alpha -$

α	$\Delta_0\delta$	$log\,(\Delta_0\alpha)$	α	α	$\Delta_0\delta$	$log\,(\Delta_0\alpha)$	α	α	$\Delta_0\delta$	$log\,(\Delta_0\alpha)$	α
m. s.	"		s. m.	m. s.	"		s. m.	m. s.	"		s. m.
30 0	7.6753	0.091777	0 30	40 0	6.8597	0.099147	0 20	50 0	6.0311	0.105581	0 10
10	618	1908	50	10	460	9262	50	10	172	5681	50
20	483	2038	40	20	323	9377	40	20	6.0032	5780	40
30	348	2168	30	30	186	9491	30	30	5.9893	5879	30
40	213	2298	20	40	6.8048	9605	20	40	754	5978	20
50	7.6078	2428	10	50	6.7911	9719	10	50	615	6076	10
31 0	7.5943	2557	0 29	41 0	774	9833	0 19	51 0	476	6174	0 9
10	808	2686	50	10	637	0.099946	50	10	336	6272	50
20	673	2815	40	20	499	0.100059	40	20	197	6370	40
30	538	2944	30	30	362	0172	30	30	5.9058	6467	30
40	403	3072	20	40	224	0284	20	40	5.8918	6564	20
50	268	3200	10	50	6.7087	0396	10	50	779	6661	10
32 0	7.6133	3328	0 28	42 0	6.6950	0508	0 18	52 0	639	6758	0 8
10	7.4997	3455	50	10	812	0620	50	10	500	6854	50
20	862	3582	40	20	675	0731	40	20	360	6951	40
30	727	3709	30	30	537	0843	30	30	221	7047	30
40	591	3836	20	40	399	0954	20	40	5.8081	7142	20
50	456	3962	10	50	262	1064	10	50	5.7941	7238	10
33 0	321	4088	0 27	43 0	6.6124	1175	0 17	53 0	802	7333	0 7
10	185	4214	50	10	6.5986	1285	50	10	662	7428	50
20	7.4050	4340	40	20	849	1395	40	20	522	7523	40
30	7.3914	4465	30	30	711	1504	30	30	383	7617	30
40	778	4590	20	40	573	1614	20	40	243	7711	20
50	643	4715	10	50	435	1723	10	50	5.7103	7805	10
34 0	507	4840	0 26	44 0	297	1832	0 16	54 0	5.6963	7899	0 6
10	371	4964	50	10	159	1940	50	10	823	7992	50
20	236	5088	40	20	6.5021	2049	40	20	684	8085	40
30	7.3100	5212	30	30	6.4883	2157	30	30	544	8178	30
40	7.2964	5335	20	40	745	2265	20	40	404	8271	20
50	828	5458	10	50	607	2372	10	50	264	8363	10
35 0	692	5581	0 25	45 0	469	2480	0 15	55 0	5.6124	8455	0 5
10	556	5704	50	10	331	2587	50	10	5.5984	8547	50
20	420	5826	40	20	193	2694	40	20	844	8639	40
30	284	5948	30	30	6.4055	2800	30	30	703	8731	30
40	148	6070	20	40	6.3916	2906	20	40	563	8822	20
50	7.2012	6192	10	50	778	3012	10	50	423	8913	10
36 0	7.1876	6313	0 24	46 0	640	3118	0 14	56 0	283	9003	0 4
10	739	6434	50	10	502	3224	50	10	143	9094	50
20	603	6555	40	20	363	3329	40	20	5.5002	9184	40
30	467	6676	30	30	225	3434	30	30	5.4862	9274	30
40	331	6796	20	40	6.3086	3539	20	40	722	9364	20
50	194	6916	10	50	6.2948	3644	10	50	582	9453	10
37 0	7.1058	7036	0 23	47 0	809	3748	0 13	57 0	441	9542	0 3
10	7.0922	7156	50	10	671	3852	50	10	301	9631	50
20	785	7275	40	20	532	3956	40	20	160	9720	40
30	649	7394	30	30	394	4059	30	30	5.4020	9808	30
40	512	7513	20	40	255	4162	20	40	5.3879	9897	20
50	376	7631	10	50	6.2116	4265	10	50	739	0.109985	10
38 0	239	7749	0 22	48 0	6.1978	4368	0 12	58 0	598	0.110072	0 2
10	7.0102	7867	50	10	839	4471	50	10	458	0160	50
20	6.9965	7985	40	20	700	4573	40	20	317	0247	40
30	829	8102	30	30	561	4675	30	30	177	0334	30
40	692	8220	20	40	423	4777	20	40	5.3036	0421	20
50	555	8337	10	50	284	4878	10	50	5.2895	0507	10
39 0	419	8453	0 21	49 0	145	4979	0 11	59 0	755	0593	0 1
10	282	8570	50	10	6.1006	5080	50	10	614	0679	50
20	145	8686	40	20	6.0867	5181	40	20	473	0765	40
30	6.9008	8802	30	30	728	5281	30	30	332	0851	30
40	6.8871	8917	20	40	589	5381	20	40	191	0936	20
50	734	9032	10	50	450	5481	10	50	5.2051	1021	10
40 0	6.8597	0.099147	0 20	50 0	6.0311	0.105581	0 10	60 0	5.1910	0.111106	0 0

7*h*. $\Delta\delta -, \Delta\alpha +$ 19*h*. $\Delta\delta +, \Delta\alpha -$ VII*h*, XIX*h*.

TABLE X—Continued. ANNUAL PRECESSIONS, 1850

Vh, XVIIIh. 5h. Δδ +, Δα + 17h. Δδ —, Δα —

a	$\Delta_0\delta$	log ($\Delta_0\alpha$)	a	a	$\Delta_0\delta$	log ($\Delta_0\alpha$)	a	a	$\Delta_0\delta$	log ($\Delta_0\alpha$)	a
m. s.	"		s. m.	m. s.	"		s. m.	m. s.	"		s. m.
0 0	5.1919	0.111106	0 60	10 0	4.3410	0.115743	0 50	20 0	3.4828	0.119513	0 40
10	769	1156	50	10	268	5813	50	10	684	9569	50
20	638	1274	40	20	4.3125	5883	40	20	540	9624	40
30	487	1358	30	30	4.2983	5952	30	30	397	9679	30
40	346	1412	20	40	840	6021	20	40	253	9734	20
50	205	1526	10	50	698	6090	10	50	3.4109	9789	10
1 0	5.1061	1669	0 59	11 0	555	6159	0 49	21 0	3.3965	9843	0 39
10	5.0923	1692	50	10	413	6227	50	10	822	9897	50
20	782	1775	40	20	270	6296	40	20	678	0.119951	40
30	641	1857	30	30	4.2128	6364	30	30	534	0.120005	30
40	500	1959	20	40	4.1985	6431	20	40	390	0058	20
50	358	2021	10	50	842	6499	10	50	246	0111	10
2 0	217	2103	0 58	12 0	700	6566	0 48	22 0	3.3103	0164	0 38
10	5.0076	2185	50	10	557	6633	50	10	3.2959	0217	50
20	4.9935	2266	40	20	414	6700	40	20	815	0270	40
30	793	2347	30	30	272	6766	30	30	671	0322	30
40	652	2428	20	40	4.1129	6833	20	40	527	0374	20
50	511	2509	10	50	4.0986	6899	10	50	383	0426	10
3 0	370	2589	0 57	13 0	843	6965	0 47	23 0	239	0477	0 37
10	228	2669	50	10	700	7030	50	10	3.2095	0529	50
20	4.9087	2749	40	20	558	7096	40	20	3.1951	0580	40
30	4.8945	2829	30	30	415	7161	30	30	807	0631	30
40	804	2908	20	40	272	7225	20	40	663	0681	20
50	662	2987	10	50	4.0129	7290	10	50	519	0732	10
4 0	521	3066	0 56	14 0	3.9986	7354	0 46	24 0	375	0782	0 36
10	379	3144	50	10	843	7418	50	10	231	0832	50
20	238	3223	40	20	700	7482	40	20	3.1087	0881	40
30	4.8096	3301	30	30	557	7546	30	30	3.0943	0931	30
40	4.7955	3379	20	40	414	7610	20	40	799	0980	20
50	813	3457	10	50	271	7673	10	50	655	1029	10
5 0	671	3534	0 55	15 0	3.9128	7736	0 45	25 0	510	1078	0 35
10	530	3611	50	10	3.8985	7798	50	10	366	1126	50
20	388	3688	40	20	842	7861	40	20	222	1174	40
30	246	3765	30	30	699	7923	30	30	3.0078	1222	30
40	4.7104	3841	20	40	556	7985	20	40	2.9934	1270	20
50	4.6963	3917	10	50	413	8047	10	50	789	1318	10
6 0	821	3993	0 54	16 0	269	8105	0 44	26 0	645	1365	0 34
10	679	4069	50	10	3.8126	8170	50	10	501	1412	50
20	537	4144	40	20	3.7983	8231	40	20	357	1459	40
30	395	4220	30	30	840	8291	30	30	212	1506	30
40	253	4295	20	40	697	8352	20	40	2.9068	1552	20
50	4.6111	4369	10	50	553	8412	10	50	2.8924	1598	10
7 0	4.5969	4444	0 53	17 0	410	8472	0 43	27 0	779	1644	0 33
10	827	4518	50	10	267	8532	50	10	635	1690	50
20	685	4592	40	20	3.7123	8592	40	20	491	1735	40
30	543	4666	30	30	3.6980	8651	30	30	346	1780	30
40	401	4739	20	40	837	8710	20	40	202	1825	20
50	259	4813	10	50	693	8769	10	50	2.8058	1870	10
8 0	4.5117	4886	0 52	18 0	550	8828	0 42	28 0	2.7913	1915	0 32
10	4.4975	4958	50	10	406	8886	50	10	769	1959	50
20	833	5031	40	20	263	8944	40	20	624	2003	40
30	691	5103	30	30	3.6119	9002	30	30	480	2047	30
40	548	5175	20	40	3.5976	9060	20	40	335	2090	20
50	406	5247	10	50	833	9118	10	50	191	2134	10
9 0	264	5319	0 51	19 0	689	9175	0 41	29 0	2.7046	2177	0 31
10	4.4122	5390	50	10	546	9232	50	10	2.6902	2219	50
20	4.3979	5461	40	20	402	9289	40	20	757	2262	40
30	837	5532	30	30	258	9345	30	30	613	2305	30
40	695	5603	20	40	3.5115	9401	20	40	468	2347	20
50	552	5673	10	50	3.4971	9457	10	50	323	2389	10
10 0	4.3410	0.115743	0 50	20 0	3.4828	0.119513	0 40	30 0	2.6179	0.122430	0 30

6h. Δδ —, Δα + 18h. Δδ +, Δα — VIh, XVIIIh.

TABLE X—Continued. ANNUAL PRECESSIONS, 1850.

V*h*, XVII*h*. **5*h*. $\Delta\delta+$, $\Delta\alpha+$** **17*h*. $\Delta\delta-$, $\Delta\alpha-$**

α	$\Delta_0\delta$		$log\ (\Delta_0\alpha)$		α	α	$\Delta_0\delta$		$log\ (\Delta_0\alpha)$		α	α	$\Delta_0\delta$		$log\ (\Delta_0\alpha)$		α
m. s.	"				s. m.	m. s.	"				s. m.	m. s.	"				s. m.
30 0	2.6179		0.122430		0 30	49 0	1.7480		0.124506		0 20	50 0	0.8748		0.125748		0 10
		145		42				145		27				145		14	
10	2.6034	144	2472	41	50	10	335	145	4533	27	50	10	603	146	5762	13	50
30	2.5890	145	2513	41	40	20	190	145	4561	27	40	20	457	146	5775	14	40
30	745	145	2554	41	30	30	1.7044	146	4588	27	30	30	311	146	5789	14	30
40	600	145	2595	41	20	40	1.6899	145	4615	27	20	40	166	145	5802	13	20
50	456	144	2635	40	10	50	754	145	4641	26	10	50	0.8020	146	5814	12	10
31 0	311	145	2676	41	0 29	41 0	608	146	4668	27	0 19	51 0	0.7874	146	5827	13	0 9
		145		40				145		26				146		12	
10	166	144	2716	39	50	10	463	145	4694	26	50	10	728	145	5839	12	50
20	2.5022	145	2755	40	40	20	318	146	4720	25	40	20	583	146	5851	12	40
30	2.4877	145	2795	40	30	30	172	145	4745	26	30	30	437	146	5863	12	30
40	732	145	2834	39	20	40	1.6927	146	4771	25	20	40	291	146	5875	11	20
50	587	145	2873	39	10	50	1.6881	145	4796	25	10	50	145	146	5886	11	10
32 0	443	144	2912	39	0 28	42 0	736	145	4821	25	0 18	52 0	0.7000	145	5897	11	0 8
		145		39				145		25				146		11	
10	298	145	2951	39	50	10	591	146	4846	24	50	10	0.6854	146	5908	11	50
20	153	145	2990	38	40	20	445	145	4870	24	40	20	708	146	5919	10	40
30	2.4008	145	3028	38	30	30	300	146	4894	24	30	30	562	146	5929	10	30
40	2.3863	145	3066	38	20	40	154	145	4918	24	20	40	416	146	5939	10	20
50	719	144	3103	37	10	50	1.5009	145	4942	24	10	50	271	145	5949	10	10
33 0	574	145	3141	38	0 27	43 0	1.4863	146	4966	24	0 17	53 0	0.6125	146	5959	10	0 7
		145		37				145		23				146		10	
10	429	145	3178	37	50	10	718	145	4989	23	50	10	0.5979	146	5969	9	50
20	284	145	3215	37	40	20	573	146	5012	23	40	20	833	145	5978	9	40
30	2.3139	145	3252	37	30	30	427	145	5035	23	30	30	688	146	5987	9	30
40	2.2994	145	3289	37	20	40	282	146	5058	22	20	40	542	146	5996	9	20
50	849	145	3325	36	10	50	1.4136	146	5080	23	10	50	396	146	6005	9	10
34 0	705	141	3361	35	0 26	44 0	1.3991	145	5103	23	0 16	54 0	250	146	6013	8	0 6
		145		36				146		22				146		8	
10	560	145	3397	36	50	10	845	145	5125	21	50	10	0.5104	145	6021	8	50
20	415	145	3433	35	40	20	700	146	5146	22	40	20	0.4959	146	6029	8	40
30	270	145	3468	35	30	30	554	146	5168	21	30	30	813	146	6037	7	30
40	2.2125	145	3503	35	20	40	409	145	5189	21	20	40	667	146	6044	7	20
50	2.1980	145	3538	35	10	50	263	146	5210	21	10	50	521	146	6051	7	10
35 0	835	145	3573	35	0 25	45 0	1.3118	145	5231	21	0 15	55 0	375	146	6058	7	0 5
		145		34				146		20				146		7	
10	690	145	3607	34	50	10	1.2972	146	5251	21	50	10	229	145	6065	7	50
20	545	145	3641	34	40	20	826	145	5272	20	40	20	0.4084	146	6072	6	40
30	400	145	3675	34	30	30	681	146	5292	20	30	30	0.3938	146	6078	6	30
40	255	145	3709	34	20	40	535	146	5312	20	20	40	792	146	6084	6	20
50	2.1110	145	3743	34	10	50	390	145	5332	20	10	50	646	146	6090	6	10
36 0	2.0965	145	3776	33	0 24	46 0	244	146	5351	19	0 14	56 0	500	146	6096	6	0 4
		145		33				145		19				146		5	
10	820	145	3809	33	50	10	1.2099	146	5370	19	50	10	354	145	6101	5	50
20	675	146	3842	33	40	20	1.1953	146	5389	19	40	20	209	146	6106	5	40
30	529	145	3875	32	30	30	807	146	5408	18	30	30	0.3063	146	6111	5	30
40	384	145	3907	32	20	40	662	145	5426	19	20	40	0.2917	146	6116	4	20
50	239	145	3939	32	10	50	516	146	5445	18	10	50	771	146	6120	5	10
37 0	2.0094	145	3971	32	0 23	47 0	371	145	5463	18	0 13	57 0	625	146	6125	4	0 3
		145		32				146		18				146		3	
10	1.9949	145	4003	31	50	10	225	146	5481	17	50	10	479	145	6129	4	50
20	804	145	4034	31	40	20	1.1079	145	5498	17	40	20	334	146	6132	4	40
30	659	145	4065	31	30	30	1.0934	146	5515	17	30	30	188	146	6136	3	30
40	514	145	4096	31	20	40	788	146	5532	17	20	40	0.2042	146	6139	3	20
50	368	146	4127	31	10	50	642	146	5549	17	10	50	0.1896	146	6142	3	10
38 0	223	145	4158	31	0 22	48 0	497	145	5566	17	0 12	58 0	750	146	6145	3	0 2
		145		30				146		17				146		3	
10	1.9078	145	4188	30	50	10	351	146	5583	16	50	10	604	145	6148	2	50
20	1.8933	145	4218	30	40	20	205	146	5599	16	40	20	459	146	6150	2	40
30	788	146	4248	30	30	30	1.0060	145	5615	16	30	30	313	146	6152	2	30
40	642	145	4278	30	20	40	0.9914	146	5631	16	20	40	167	146	6154	2	20
50	497	145	4307	29	10	50	768	146	5646	15	10	50	0.1021	146	6156	2	10
39 0	352	145	4336	29	0 21	49 0	623	145	5661	15	0 11	59 0	0.0875	146	6158	2	0 1
		145		29				146		15				146		1	
10	207	146	4365	29	50	10	477	146	5676	15	50	10	729	146	6159	1	50
20	1.8061	145	4394	28	40	20	331	145	5691	15	40	20	583	145	6160	1	40
30	1.7916	145	4422	28	30	30	186	146	5706	14	30	30	438	146	6161	1	30
40	771	145	4450	28	20	40	0.9040	146	5720	14	20	40	292	146	6161	0	20
50	626	145	4478	28	10	50	0.8894	146	5734	14	10	50	146	146	6162	1	10
		146		28				146		14				146		0	
40 0	1.7480		0.124506		0 20	50 0	0.8748		0.125748		0 10	60 0	0.0000		0.126162		0 0

6*h*. $\Delta\delta-$, $\Delta\alpha+$ **18*h*. $\Delta\delta+$, $\Delta\alpha-$** **VI*h*, XVIII*h*.

TABLE XI.

	m.	n.	$\log n$.	$\log \frac{m}{n}$	$d \log \Delta_0 a$	n'	ω
	s.	″					° ′ ″
1800	3.07082	20.0607	1.302346	9.184908	+.000093	+.0000215	23 27 54.22
1810	101	598	327	954	74	172	49.57
1820	120	590	309	4999	56	129	44.93
1830	139	581	290	5045	37	86	40.28
1840	158	573	272	090	+ 19	+ 43	35.64
1850	177	564	253	136	0	0	30.99
1860	196	555	234	181	— 19	— 43	26.34
1870	215	547	216	226	37	86	21.70
1880	234	538	197	272	56	129	17.05
1890	253	530	178	318	74	172	12.41
1900	272	521	160	363	— 93	— 215	7.76

The following quantities have also been used in the preparation of Table I. *The values of* ☊, ☾ *and* ☾—Γ′ *are taken from the American Lunar Tables.*

M. T. Greenwich.	t.	nt.	☊	☾	☾—Γ′			
	y	″	°	°	°	Change in 10 days.		
1845 Jan. 1.5	+ 4.998664	+ 100.2563	242.833	202.7445	306.133			
1846 "	3.999326	80.2128	223.504	332.1293	34.855	t	— 0.027379	
1847 "	2.999989	60.1694	204.175	101.5141	123.577	nt	— 0″.54912	—.22 (1850-y)
1848 "	2.000652	40.1260	184.847	230.8990	212.300	☊	— 0°.52954	
1849 "	+ 0.998579	+ 20.0279	165.465	13.4602	314.087	☾	+ 131.76397	
1850 "	— 0.000758	— 0.0152	146.137	142.8450	42.809	☾—Γ′	+ 130.64992	
1851 "	1.000096	20.0583	126.808	272.2298	131.531			
1852 "	1.999433	40.1013	107.480	41.6146	220.253			
1853 "	3.001506	60.1990	88.100	184.1758	322.040			
1854 "	4.000843	80.2418	68.772	313.5606	50.763			
1855 "	5.000181	— 100.2846	49.445	82.9454	139.484			

CORRIGENDA.

ge.	Col.	Reference No.	For.	Read.	Page.	Col.	Reference No.	For.	Read
				West Transit Observations.					
3	16	16	8.96	6.96	24	15	30	12*h*.	421*h*.
4	15	21	45.87	46.87		15	32	44.39	44.37
5	11&15	49	42*m*.	41*m*.		16	21	3.64	4.64
	12	35	— 2.76	+ 2.76		margin	September 29	6.62	4.62
	14	43	23.33	22.97		"	"	0.000	0.044
6	3	52	δ Leonis.	δ Hydræ et Crat.	25	11	32	36 50.67	37 0.67
	11	52	11*m*.	12*m*.		15	31	48.62	58.62
	15	52	10*m*.	11*m*.		15	32	33.16	43.16
8	11&15	16	41*m*.	42*m*.		15	40	50.38	50.28
	11&15	19	50*m*.	49*m*.		16	45	7.23	6.23
9	11&15	37	41*m*.	42*m*.	26	3	11	17 40	77 40
12	3	18	Ursæ Minoris.	ζ Ursæ Minoris.		11	12	36*m*.	37*m*.
13	15	19	50.94	58.94		11	39&40	35*m*.	36*m*.
15	3	12	a^1	a^2		12	24	0.25	0.05
	11&15	41	48*m*.	47*m*.		15	7	50.24	50.34
	16	21	30 59	3.59		15	11	10.55	10.65
	16	27	327.44	3 27.44		15	24	12.02	12.04
16	3	8	γ	ν		15	35	11.29	21.29
	11&15	1	3*m*.	2*m*.		15	39&40	33*m*.	36*m*.
	12	45	.09	.06	27	15	39	11.72	11.92
	15	16	41.43	41.45	28	1	22	insert	November 2
	15	17	13.41	12.41		11&15	10	50*m*.	49*m*.
	15	38	20*h*.	21*h*.		15	6	32.80	32.98
	15	45	48.62	58.62		15	16	31.76	31.10
17	1	1	July 13	July 31		15	30	23.61	33.61
	11	38	51.06	51.56		15	31	30.64	30.54
	15	8	2.42	22.42		15	34.35	33*m*.	32*m*.
	15	12	28*m*.	27*m*.	29	1	16&27	dele	23&24
18	3	50	insert	Weisse XXI,1398		3	3	76 40	76 70
	11	22	37.62	57.62		11	8	27.09	27.99
	15	8	16*m*.	17*m*.		14	16	.32	.52
	15	14	42*m*.	43*m*.		15	14	23.93	19.05
19	1	4	insert	August 13		15	33	32.83	32.73
	1	44	insert	August 19	30	11	9	31*h*. 36*m*.	21*h* 37*m*.
	15	45	40.34	50.34		13	37	transfer +	70.54 to line 41
	15	49	52.16	51.16		15	9	35*m*.	36*m*.
20	14	18	13.07	14.07		15	11	40.91	40.81
	15	2	12.05	29.06		15	22.23	29.13	19.13
	15	18	58.12	59.12		15	41	37*m*.	36*m*.
	15	40—41	23.70	36.31		16	47	32.35	22.35
	15	51	29.95	29.93	31	11	23	48.2	48.20
21	15	25	49.91	39.91		15	12	13.65	13.67
	15	36	43.69	33.69		15	23	45.51	44.51
	16	18	54.98	54.78		15	46	21.01	17.37
22	15	21	58.60	58.61		16	34	3.39	4.09
23	15	16—17	28 6.52	27 46.52	32	3	29	Flora.	Weisse IV, 733
	15	28	40.76	39.76		11	27	10*m*.	9*m*.
	15	39	28.49	32.49		13	4	insert	+ 67.19
24	14	28	6.20	4.20		13	27	insert	+ 69.96
	14	35	.20	.40		14	1	+	—
	15	3	6.12	6.14		15	27	11*m*.	10*m*.
	15	6	33.40	33.42		16	29	insert	5.40
	15	14	44.55	45.55	33	11&15	7	25*m*.	24*m*.

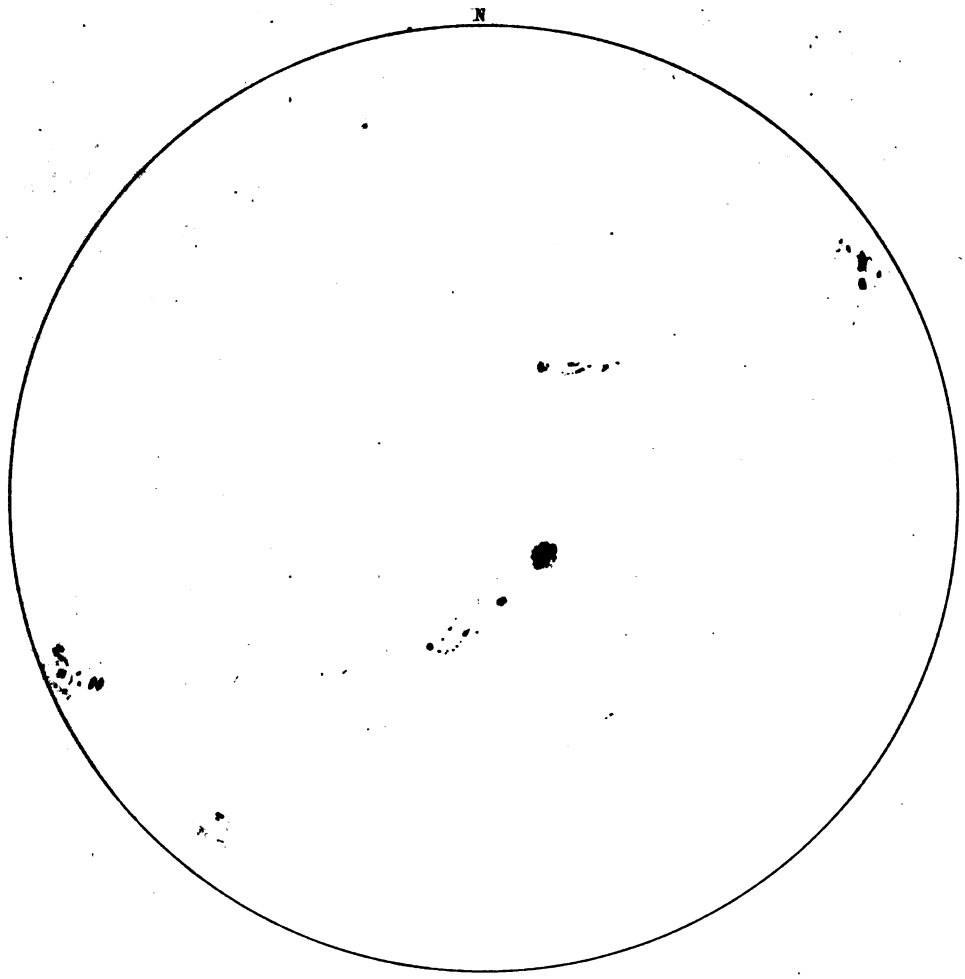
Page.	Col.	Reference No.	For.	Read.
			Mural Circle Observations.	
38	4	21&22	insert	4
40	4	21	insert	4
44	4	5&6	transpose	4½ and 4
46	4	13	7.	4
77	2	26	39.66	39.80
	4	26	34.55	34.41
	6	26	52.16	52.02
			Meridian Circle Observations.	
92	16	4	54.47	51.47
95	7	Head.	359°59′	0° 0′
96	4	52	dele	35.6
97	2	48&49	dele	+ and —
98	12	51	14°	15°
99	5	7	42.39	— 42.39
	5	8	— 10.97	+ 10.97
	5	50	19.12	— 19.12
	5	51	— 16.95	+ 16.95
	9	51	— 54°	+ 54°
101	9	52	52°	32°
104	3	6	insert	(Mic. 5)
	17	6	insert	32.762
106	3	20	insert	(Mic.)
	17	20	insert	35.341
107	4	20	2 45.64	— 2 45.64
113	5	21	+ 2 6.21	— 2 6.21
115	3	1	35.58	0.58
	4. 5. 6	1	transfer the	quantities to line 2
	5	51	24.41	+ 24.41
	7	51	insert	58.64
			Prime Vertical Transit Observations.	
164	5	41.42	S	N.
			N	S.
213	9	17.18	38.40	58.40
	9	29.30	35 51 54.80	36 40 45.93
252	2	Piscium 312	53m	58m.
253	1	α Tauri Oct. 15	19.83	18.83
	4	ρ Leonis	53.38	54.38
254	2	Canum Ven. 4536, June 18	5.19	(5.19)
			Appendix C.	
40	6	Jan. 22–23	69	59
55	3	July 17–18	23h	22h

Page.	Col.	Reference No.	For.	Read.
79	2	21	5.46	5.5
	4	21	16.73	16.6
	6	21	35.25	35.2
	6	19	13°	23°
85	2	50	39.79	39.7
	4	50	2.42	2.4
	6	50	39.48	37.4
	8	46	insert	C.
117	4	30	0 0.18	0.1
	5	24&30	—	+
119	5	22	—	+
120	1	21	insert	2
	1	22	insert	3
	3	27	(Mic.)	(Mic.
121	2	1	28.72	— 28.
	4	27	8 11.65	+ 8 11.
124	3	36	insert	(Mic.)
	17	36	insert	41.0
133	5	48	+	—
	7	42	insert	61.
141	10	13&21	insert	+
149	5	25	+	—
	5	37	—	+
152	11	49	3.12	2.
153	margin.	49	.46	.
155	3	34	28.98	28.
	margin.	52	dele the whole	line.
158	3	23	insert	(Mic. 5)
	17	23	insert	39.812
213	9	31.32	33 40.68	35 12.
	11	29.30	29.53	29.
	14	7.8	Bessel's Z. 387	Lal. 473
	14	29.30	Anonymous.	Lal. 16
255	4	ε Ursæ Minoris.	0m	1
261	1	B. A. C., 4552, Apr. 25	12h	13
55	3	Aug. 2.3	24h 23m	
60	6	June 28	7.31007	1.3
100	D_{Ω}	114°	4916	

Sestini's Sun Spots.

North Limb

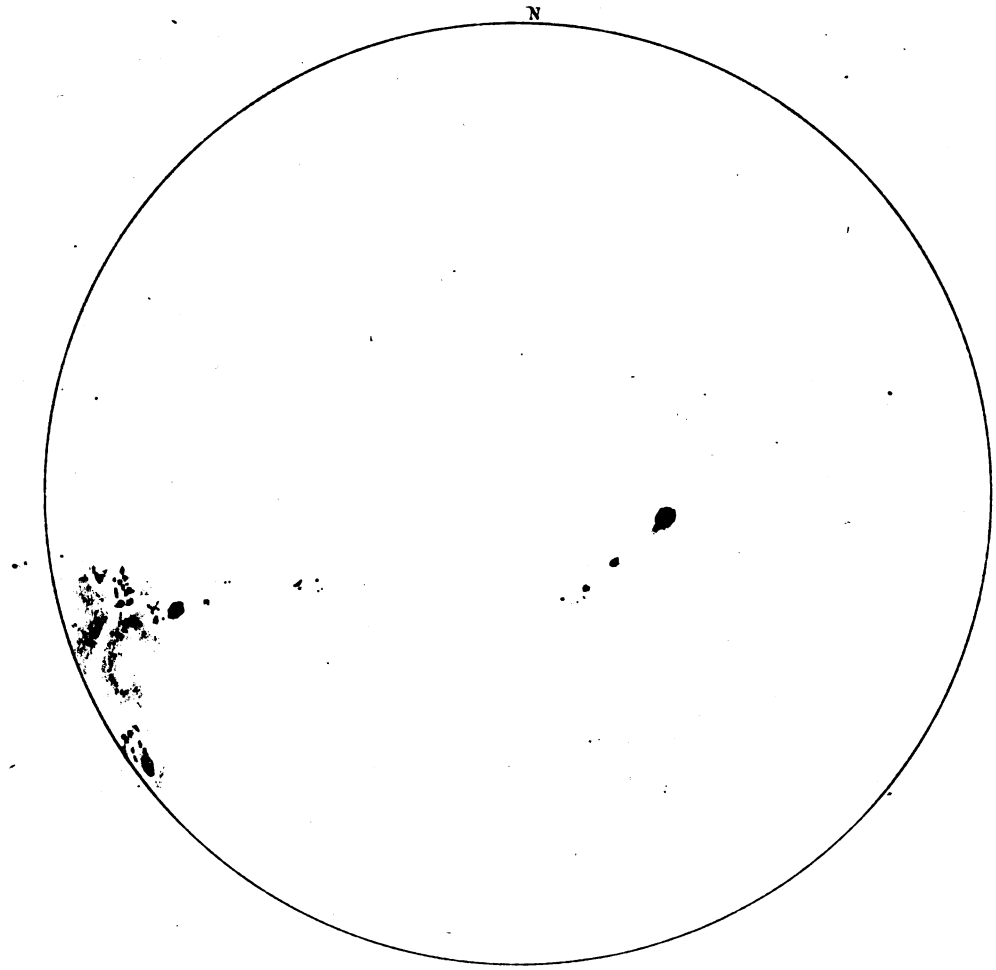
Plate I.



Sept. 19th 1850

Sestini's Sun Spots.

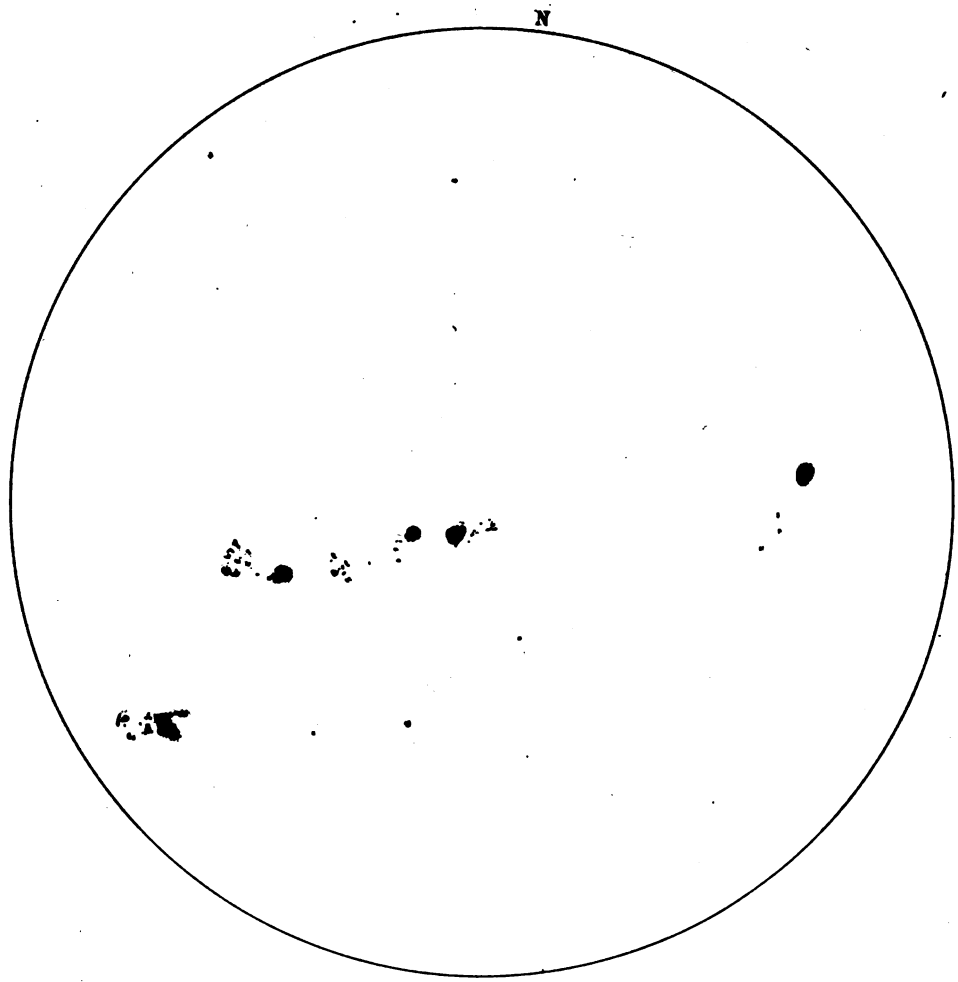
Plate II.



Sept. 20th

Sustini's Sun Spots.

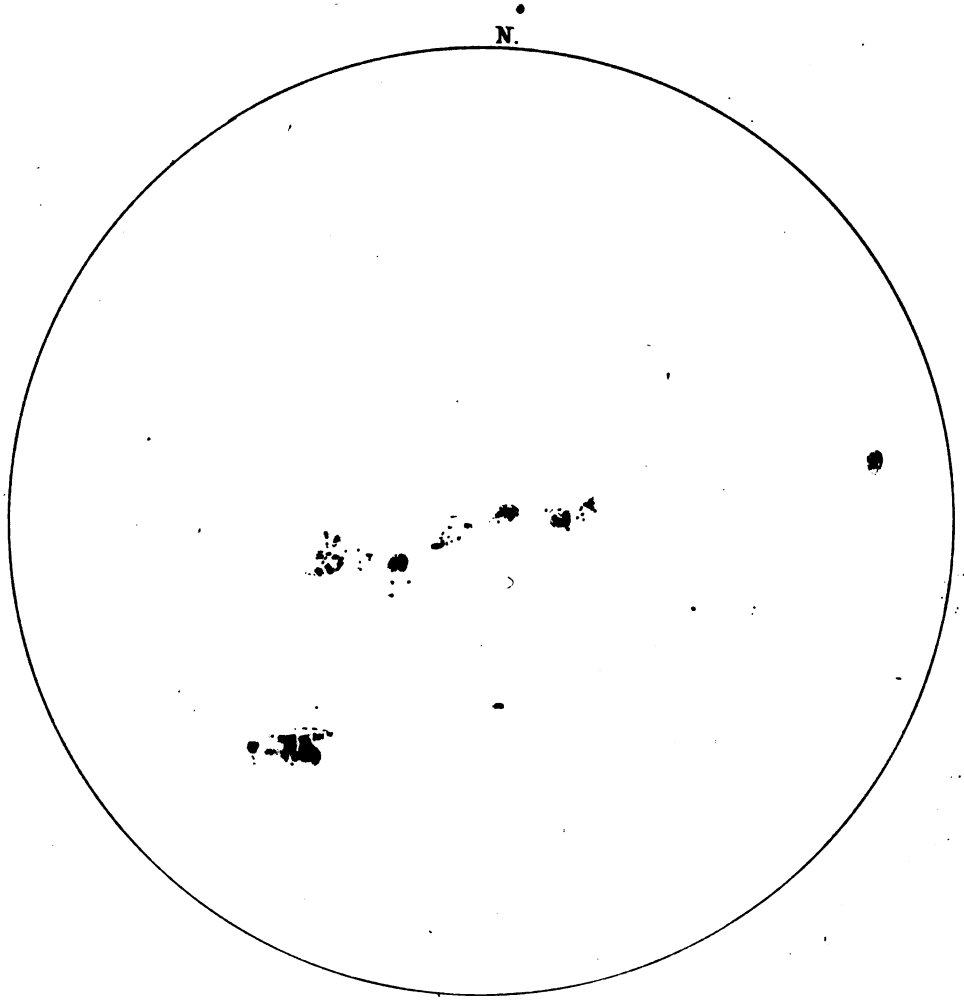
Plate IV.



Sept. 22nd

Sestini's Sun Spots

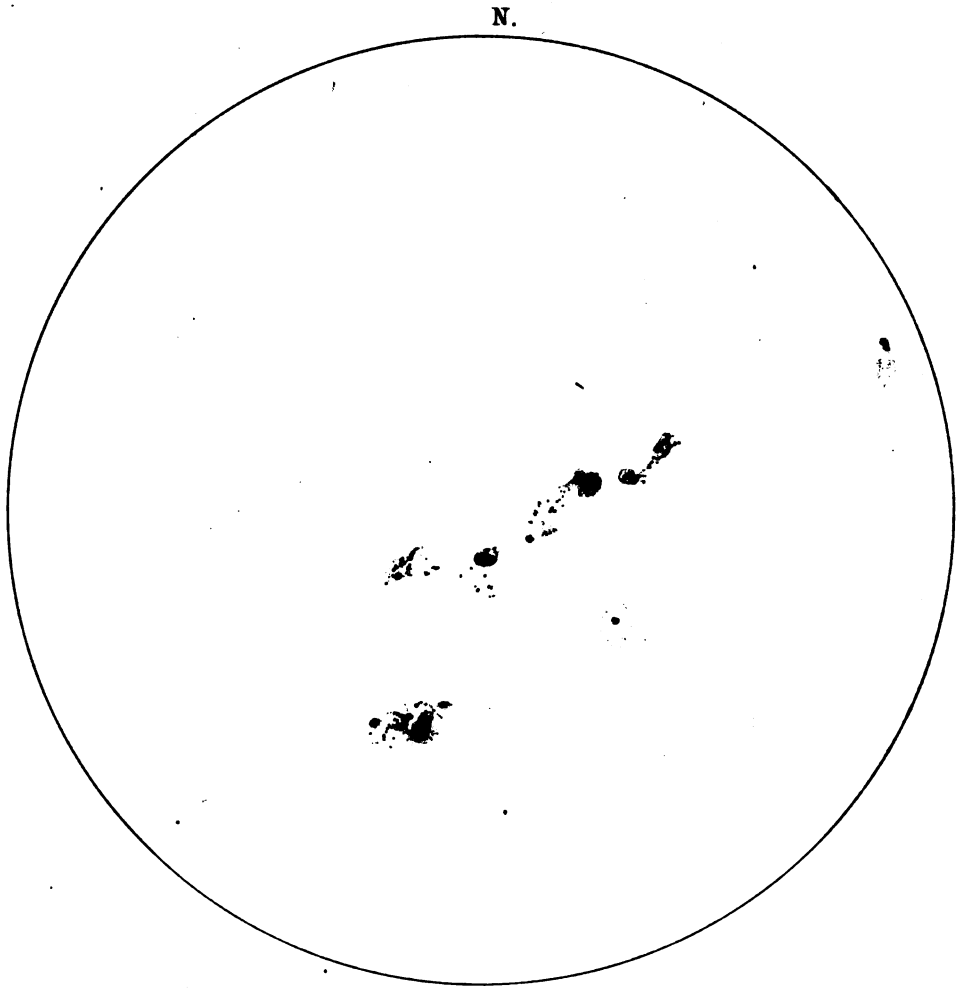
Plate V.



Sept. 23d

Sustini's Sun Spots

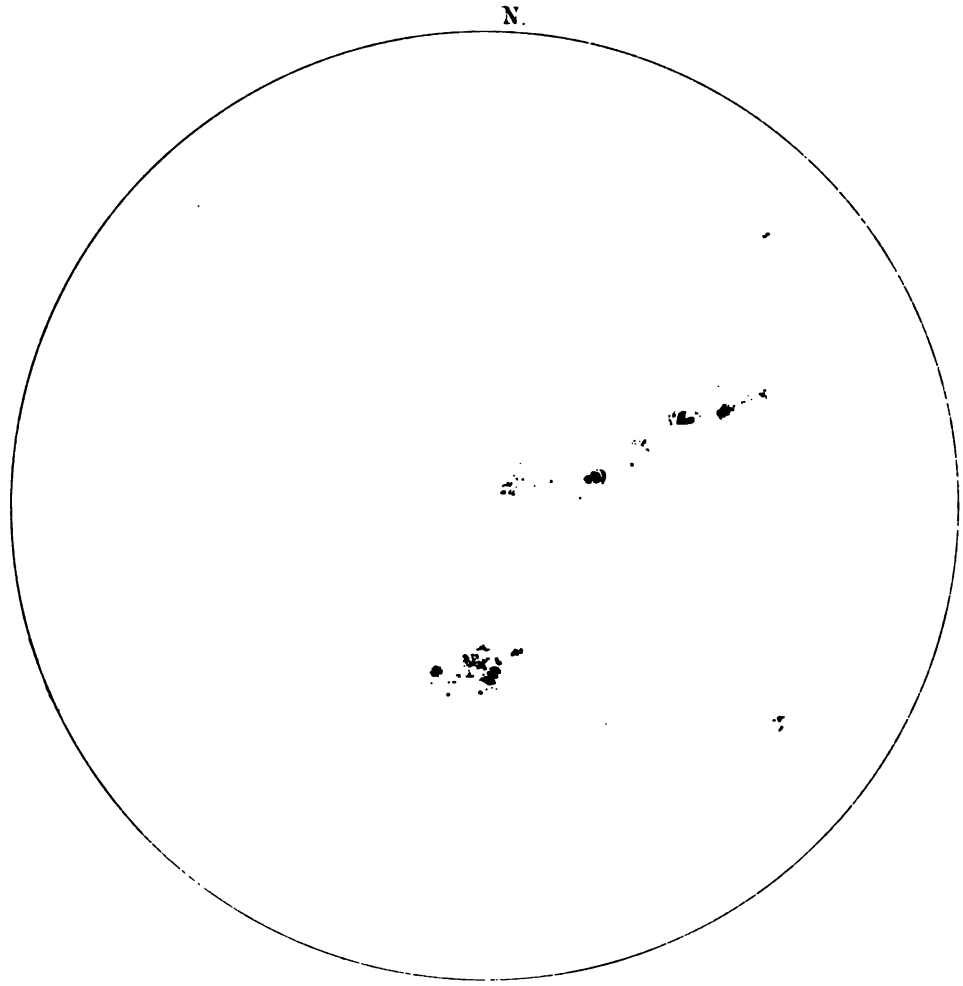
Plate VI.



Sept. 24th

Sestini's Sun Spots

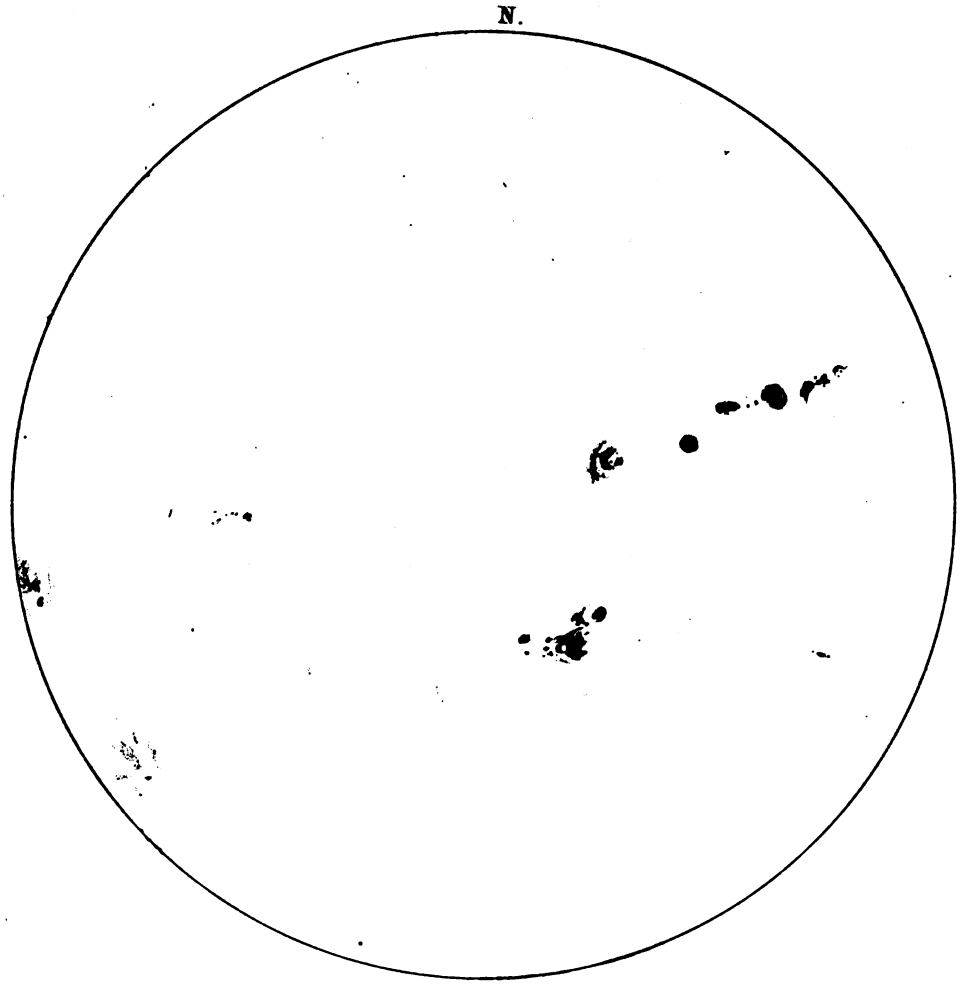
Plate VII.



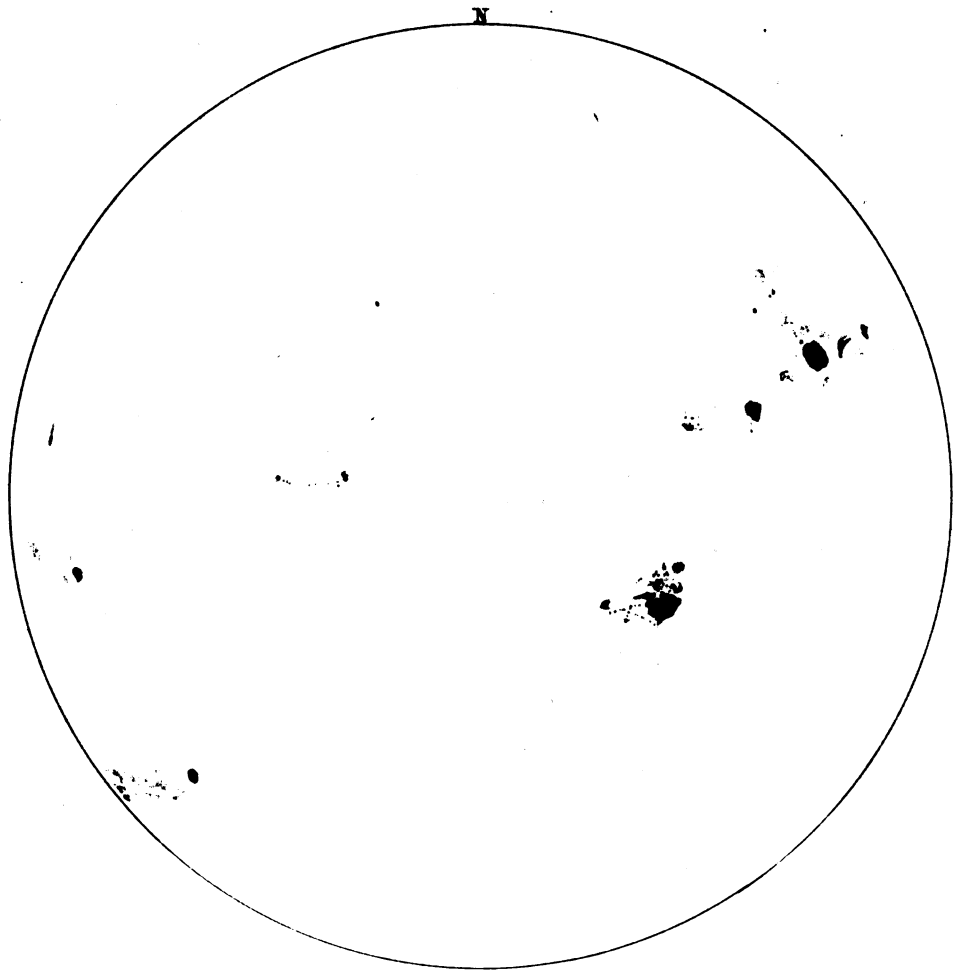
Sept. 25th

Sustini's Sun Spots

Plate VIII



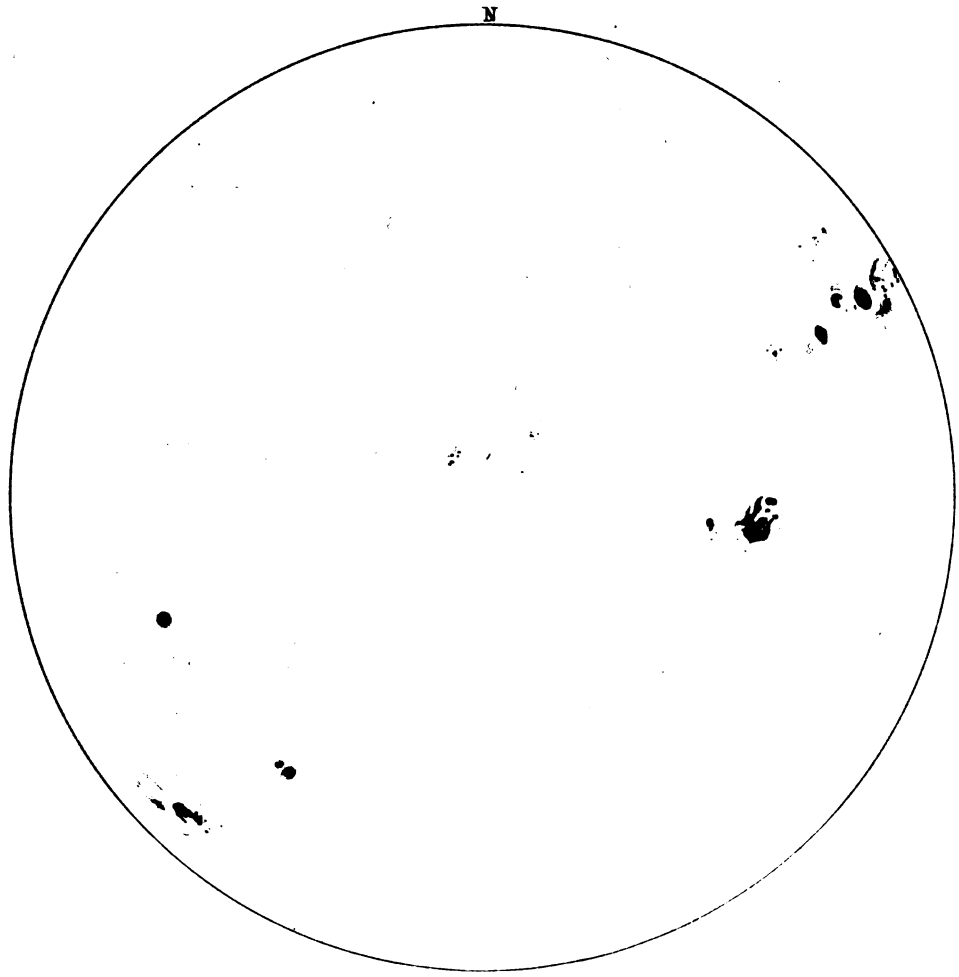
Sept. 26th



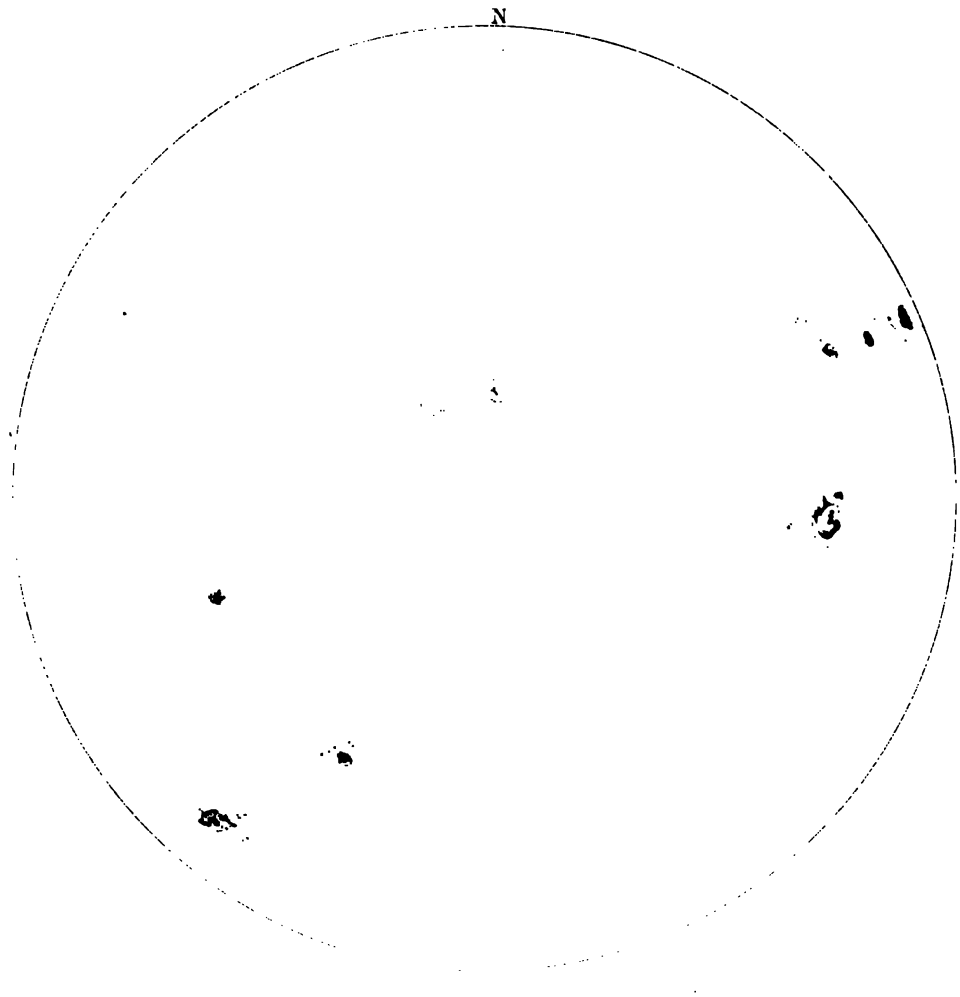
Sept. 27th

Sestinis Sun Spots

Plate X



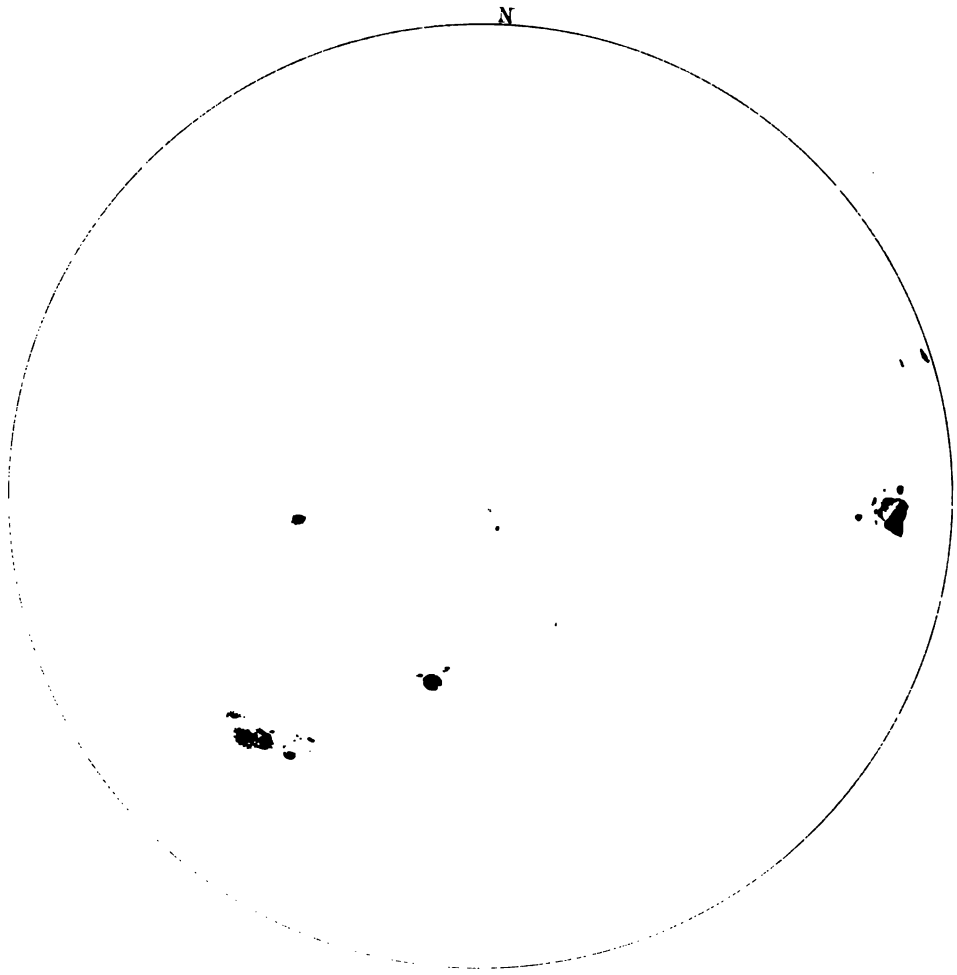
Sept. 28th



Sept. 29th

Sestini's Sun Spots

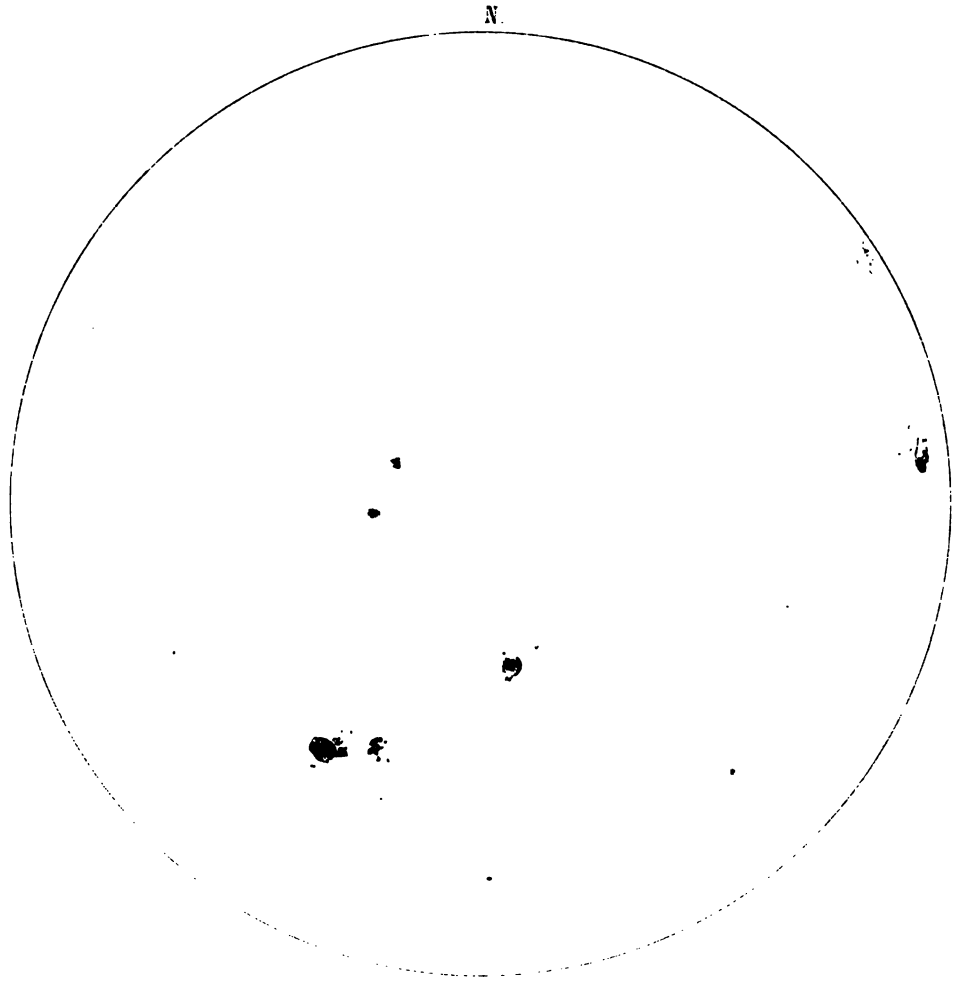
Plate XII



Sept. 30th

Sestini's Sun Spots

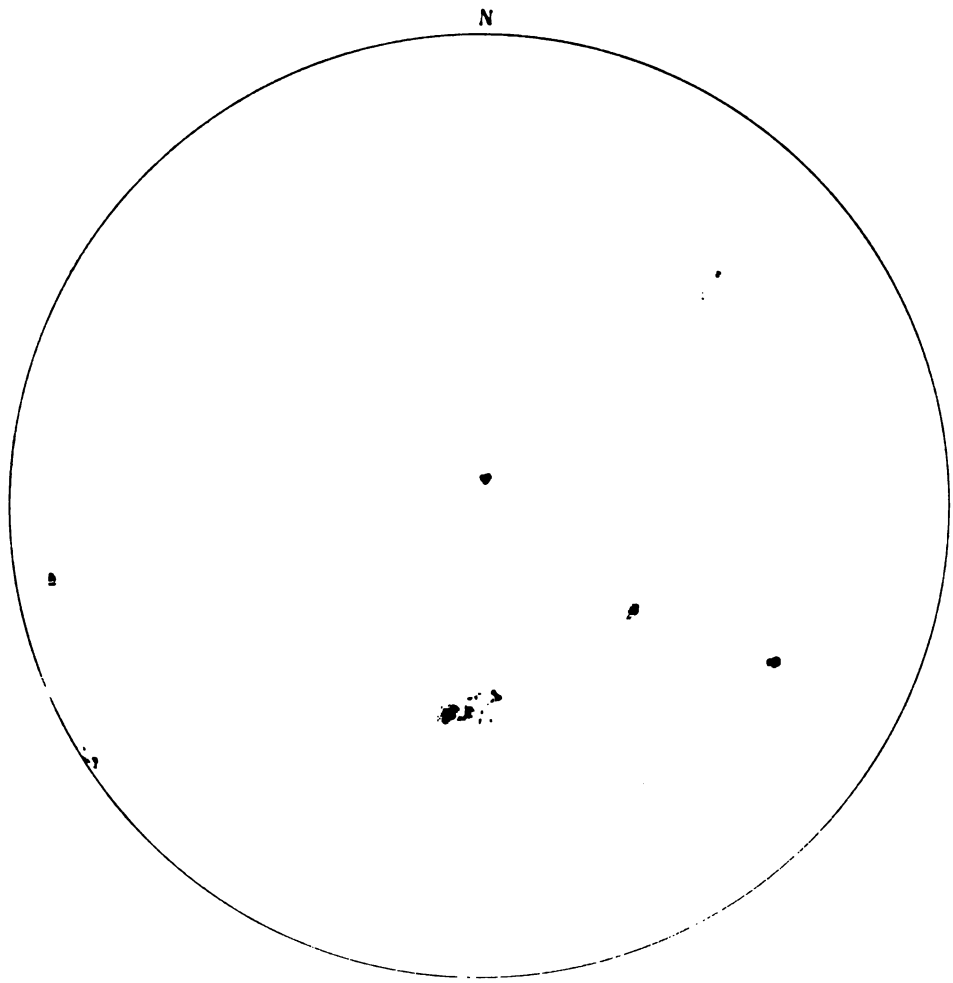
Plate XIII



Oct. 1st

Sestini's Sun Spots

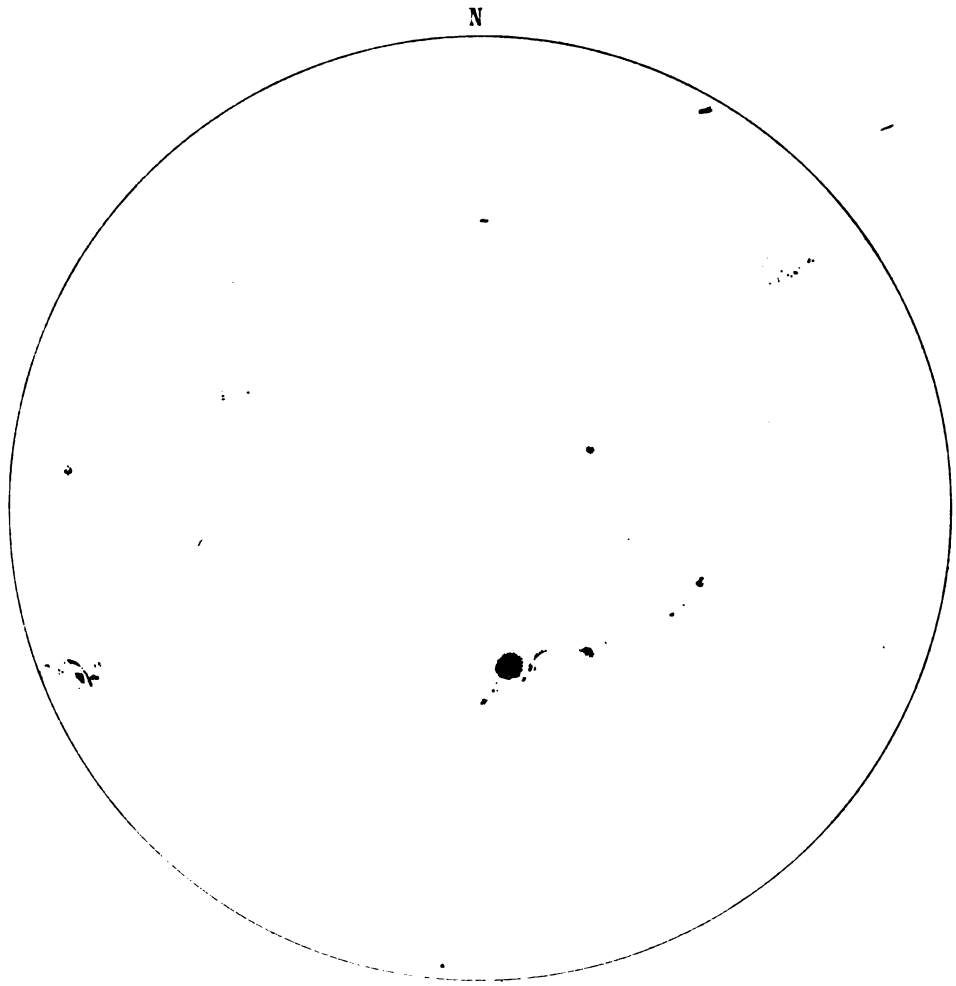
Plate XIV.



Oct. 24

Sestini's Sun Spots

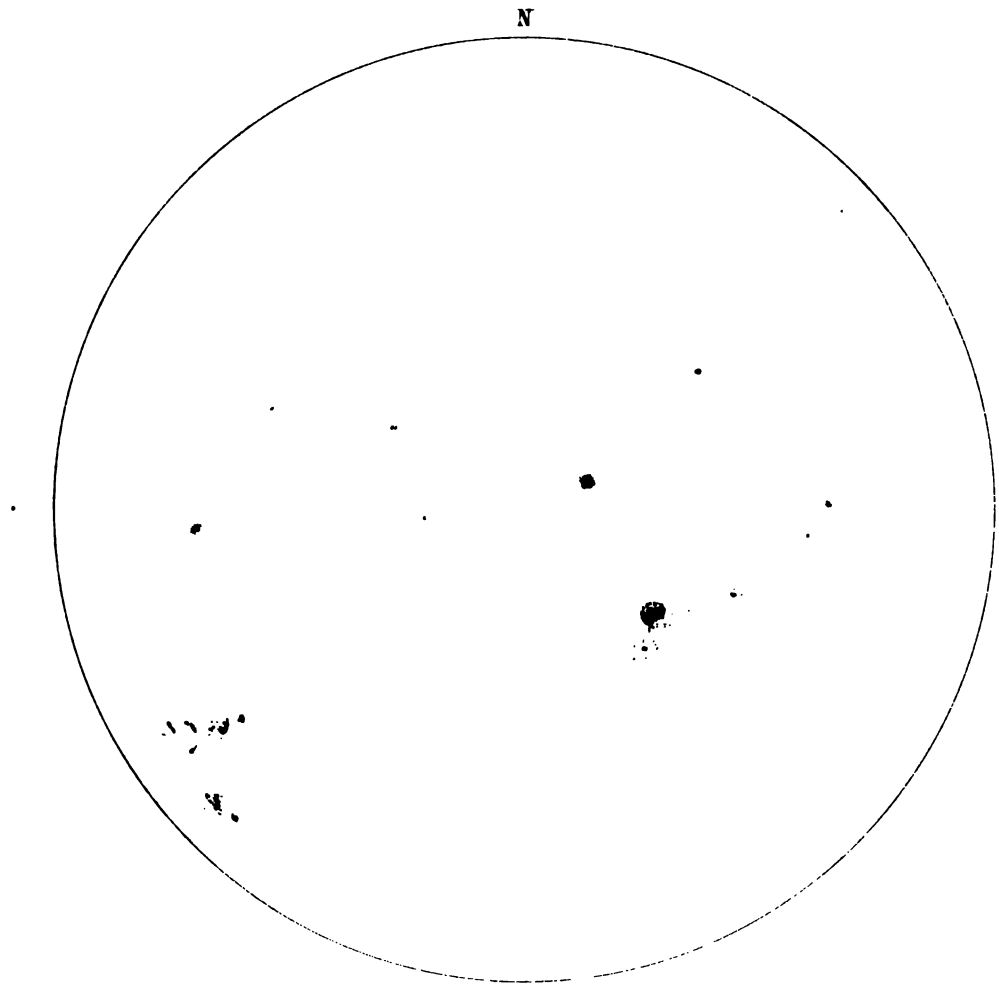
Plate XV.



Oct. 3d

Sestinis Sun Spots

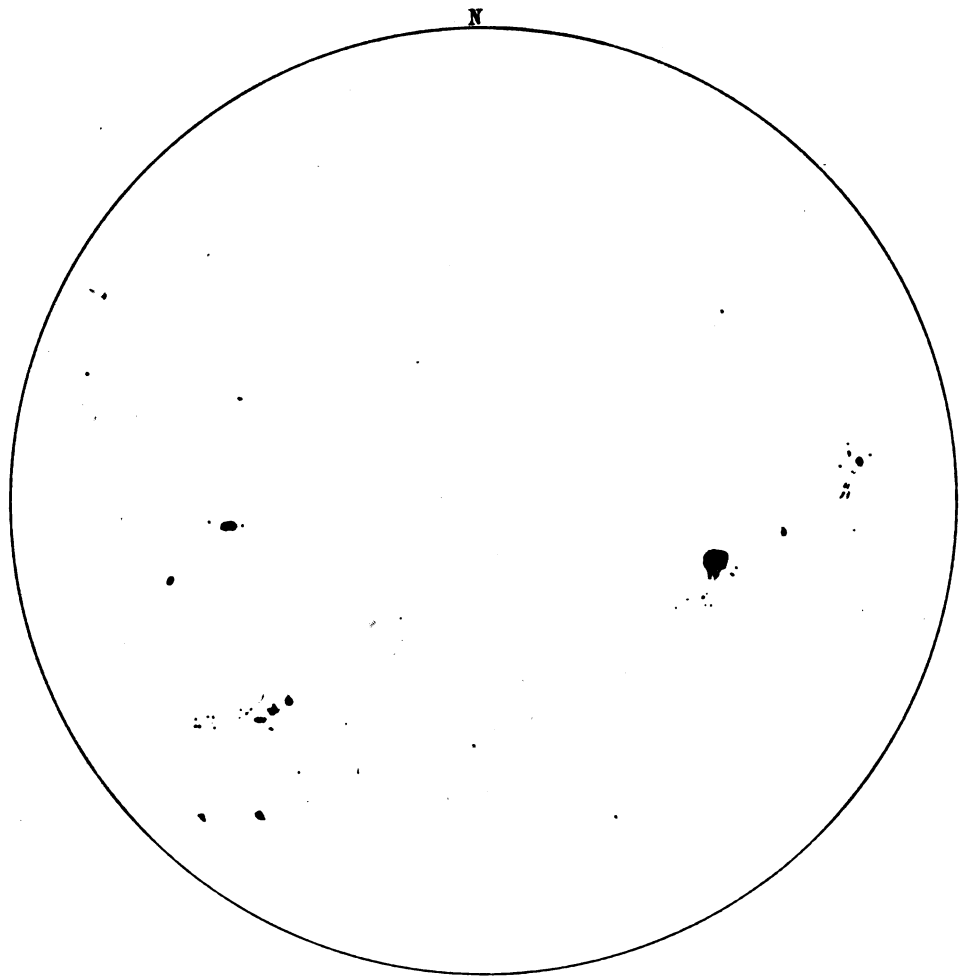
Plate XVI.



Oct. 4th

Sestini's Sun Spots

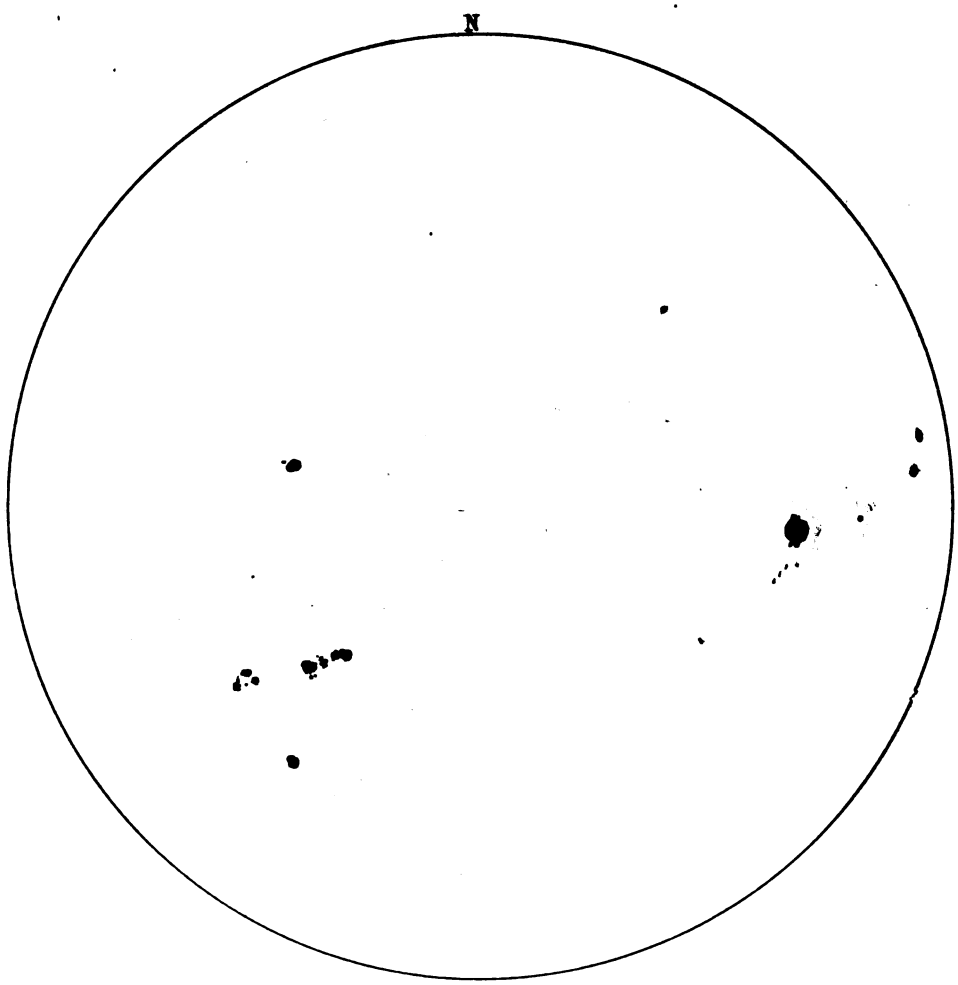
Plate XVII



Oct 5th

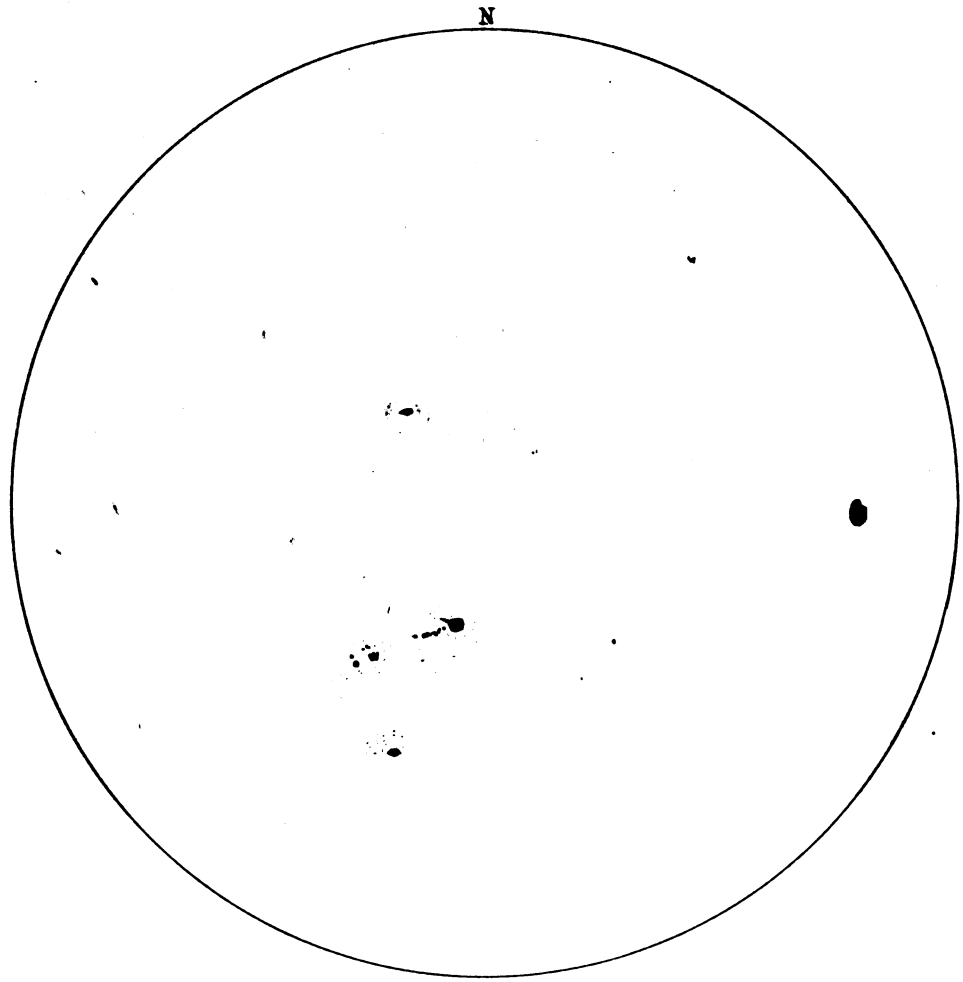
Sestini's Sun Spots

Plate XVIII



Oct. 6th

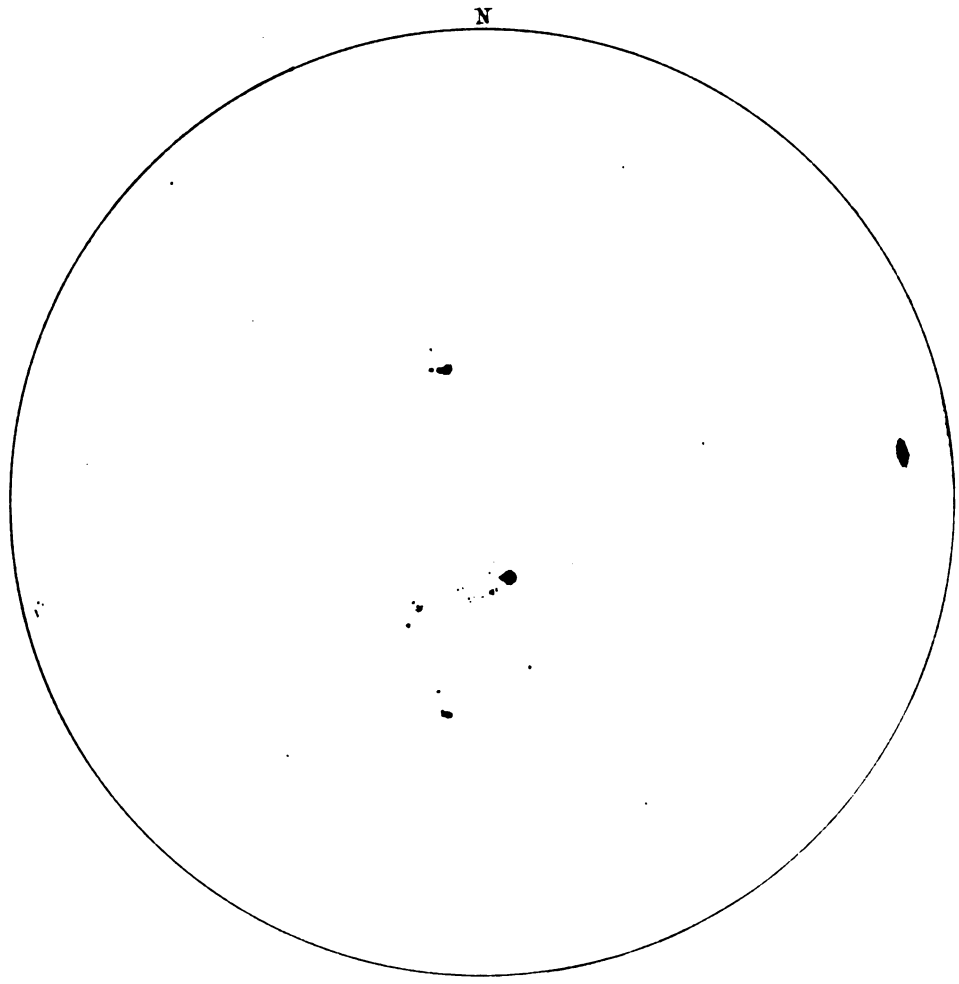
Sestini's Sun Spots **Plate XIX**

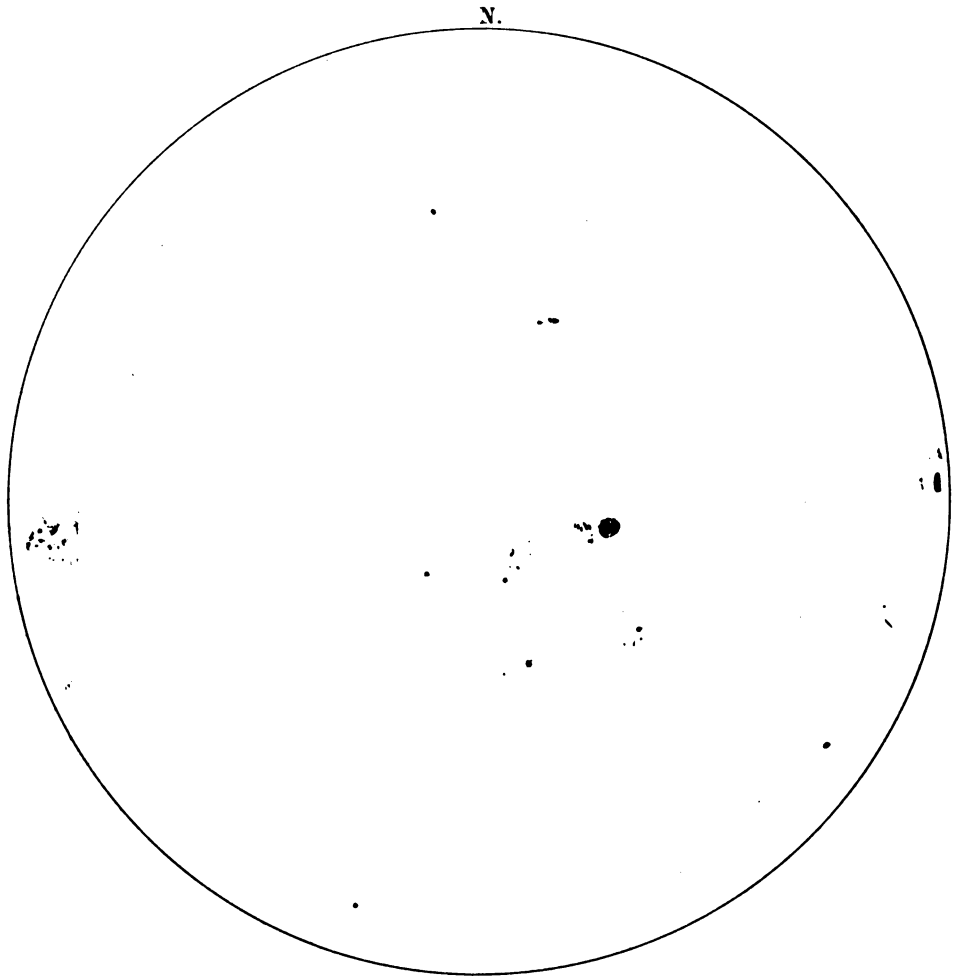


Oct. 7th

Sestinis Sun Spots

Plate XX

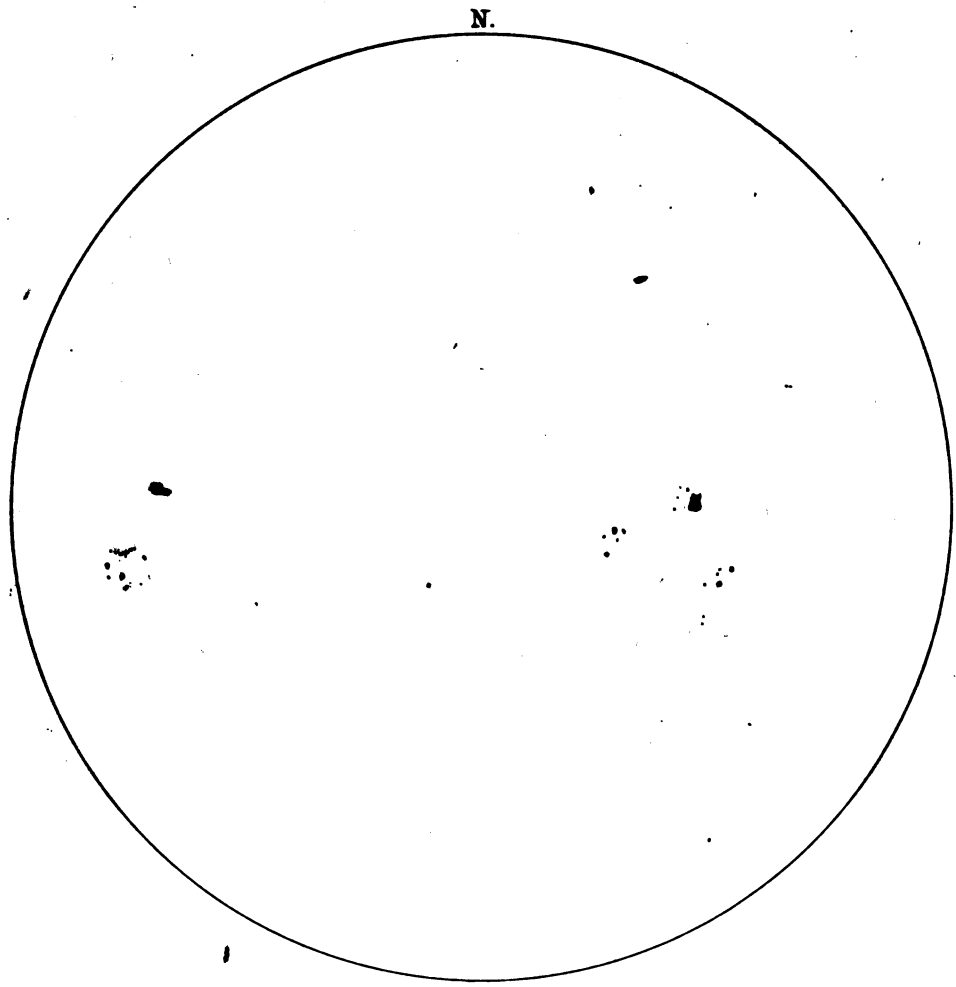




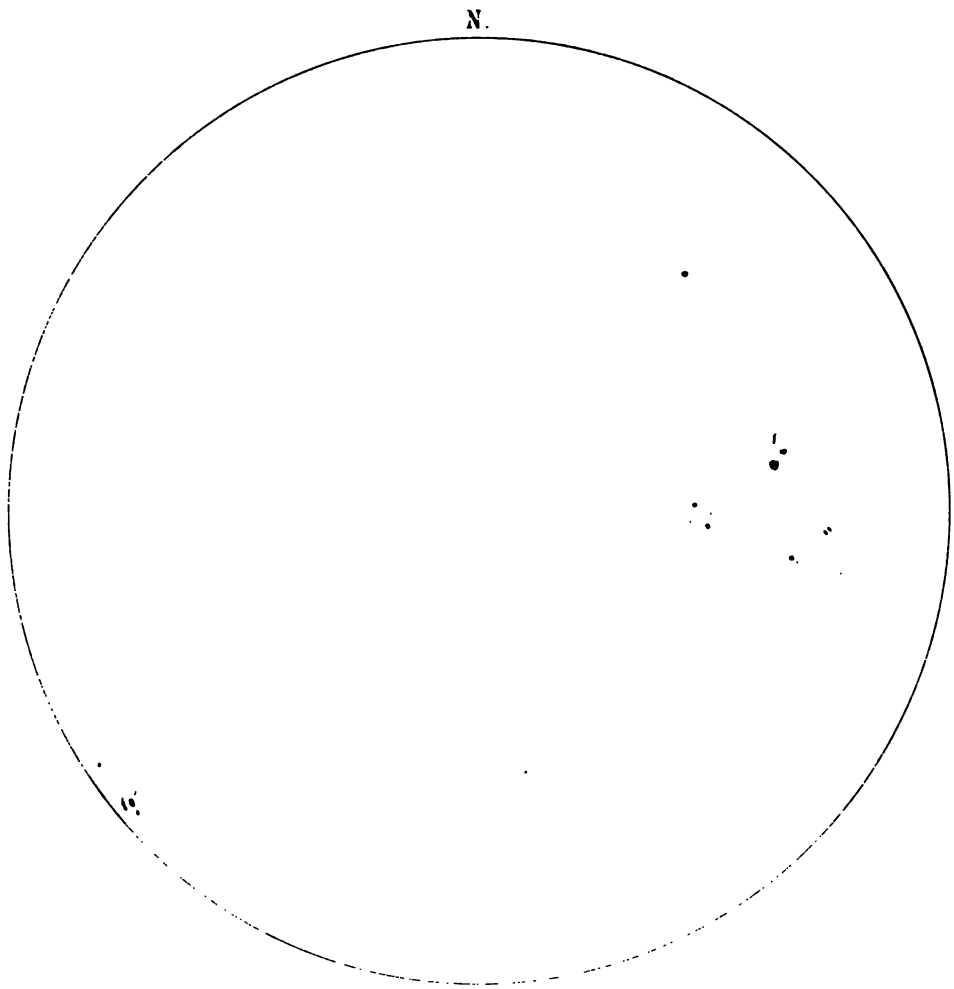
Oct. 9th

Sestini's Sun Spots

Plate XXII



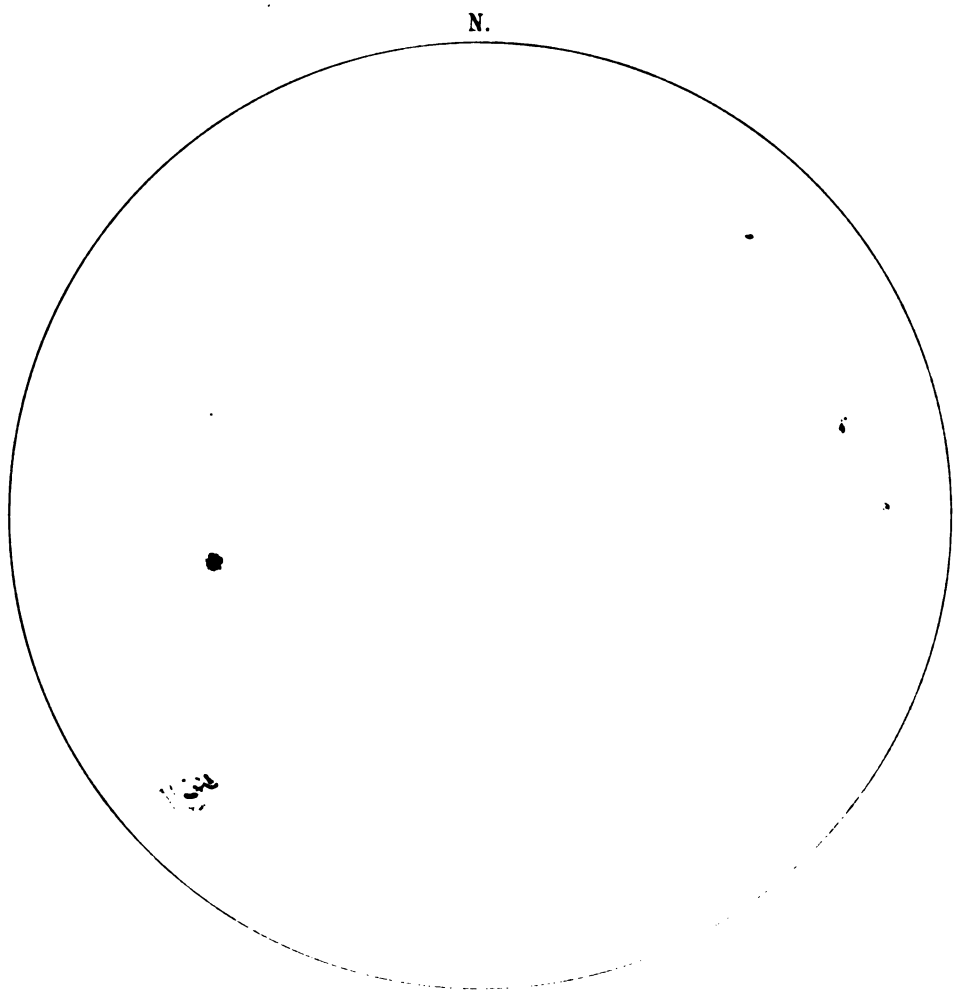
Oct. 10th



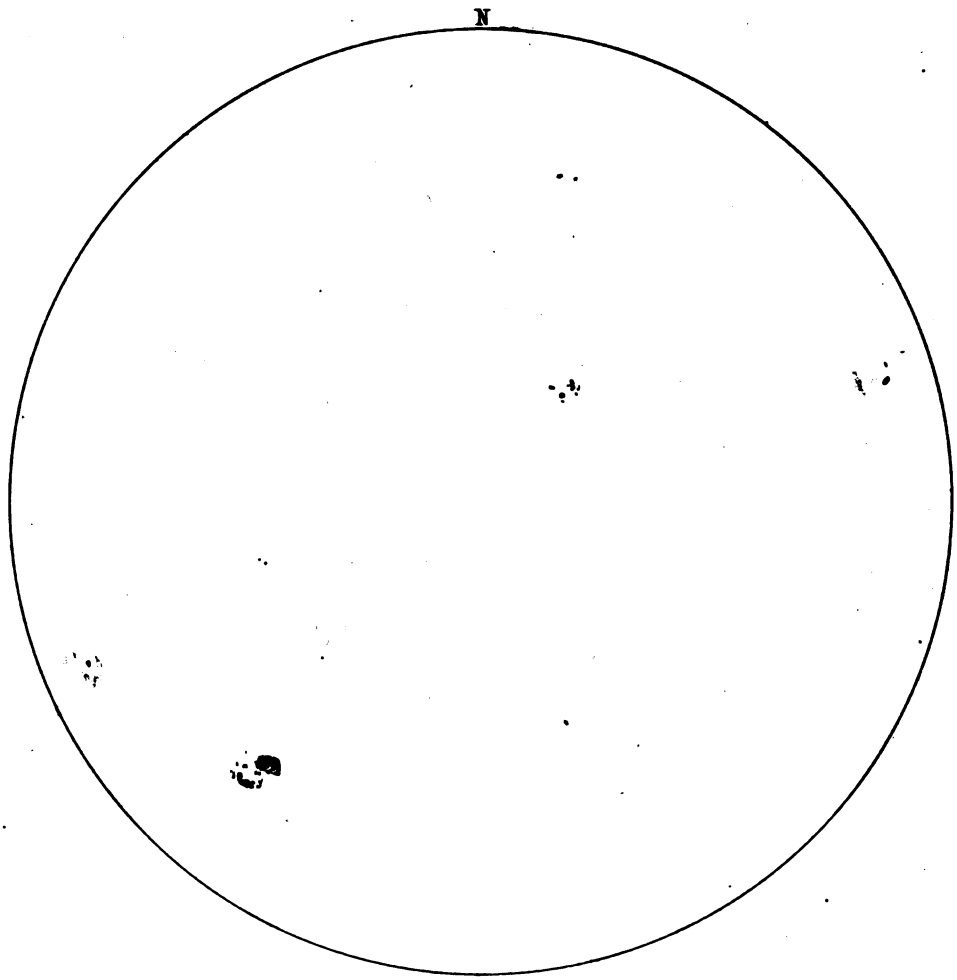
Oct. 11th

Sestini's Sun Spots

Plate XXIV.



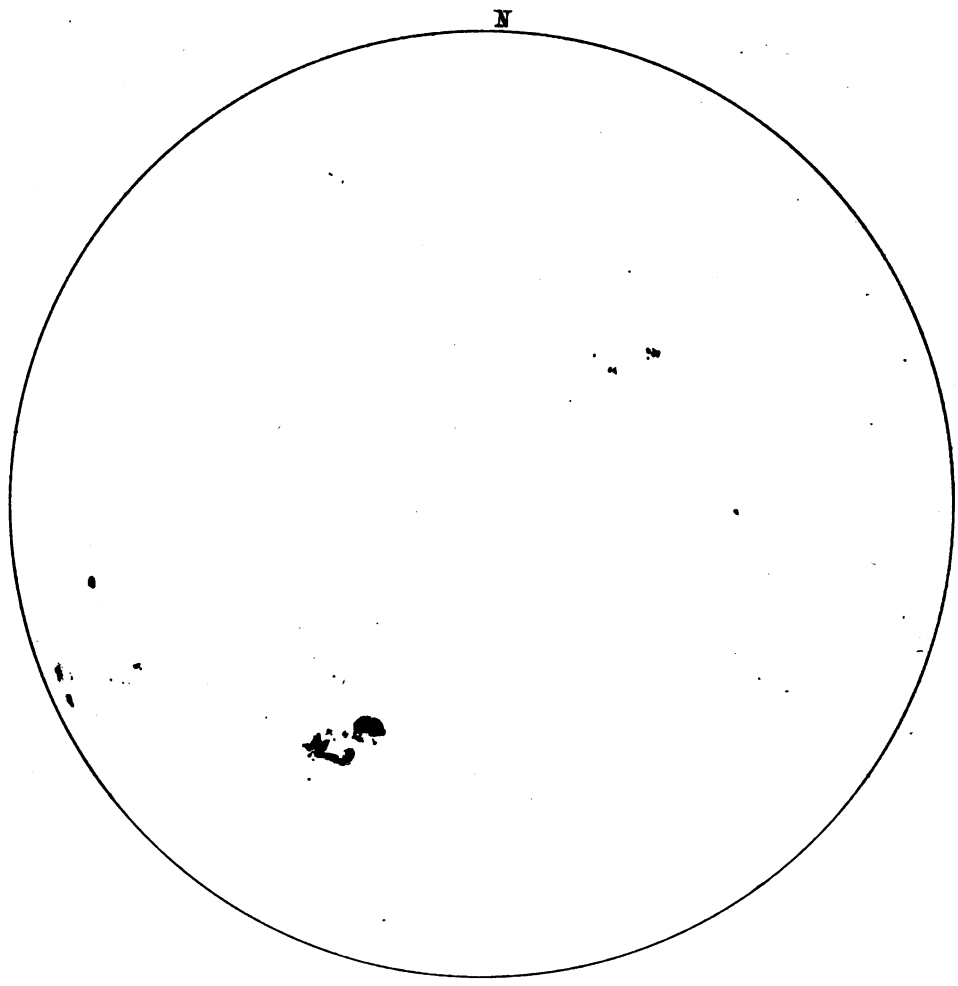
Oct. 12th



Oct. 13th

Sestini's Sun Spots

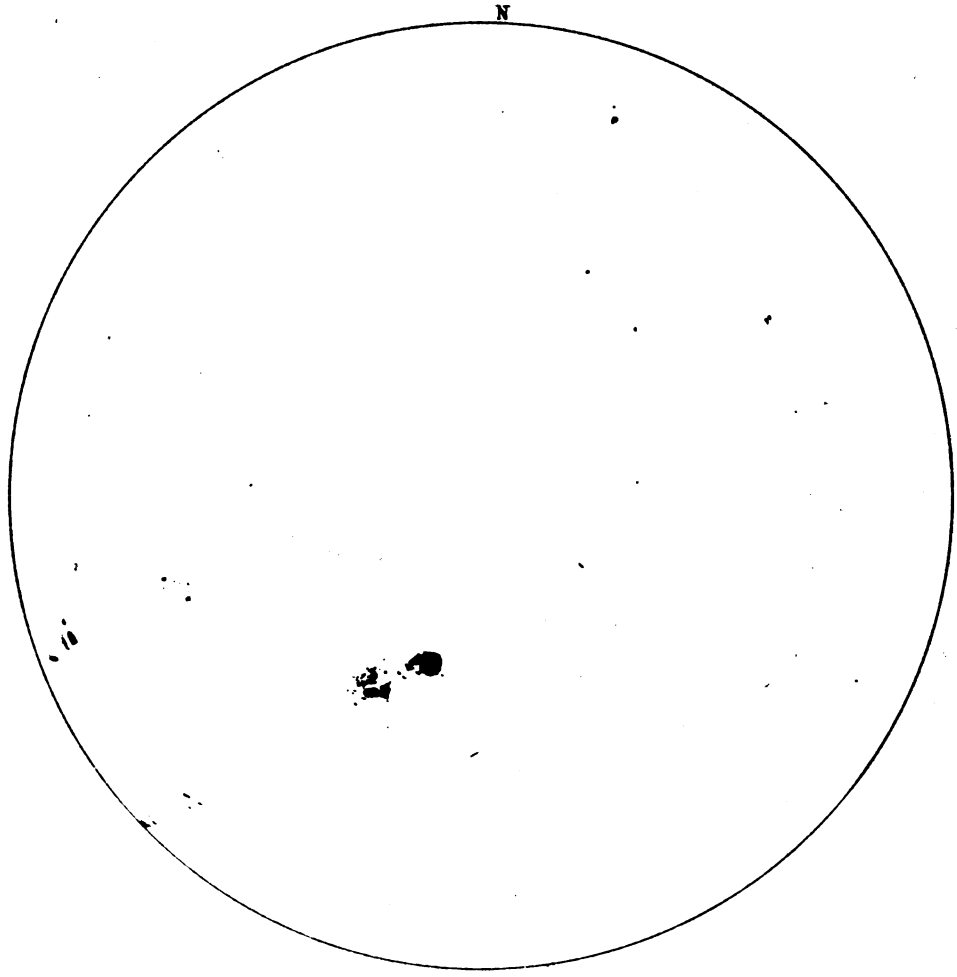
Plate XXVI



Oct. 14th

estini's Sun Spots

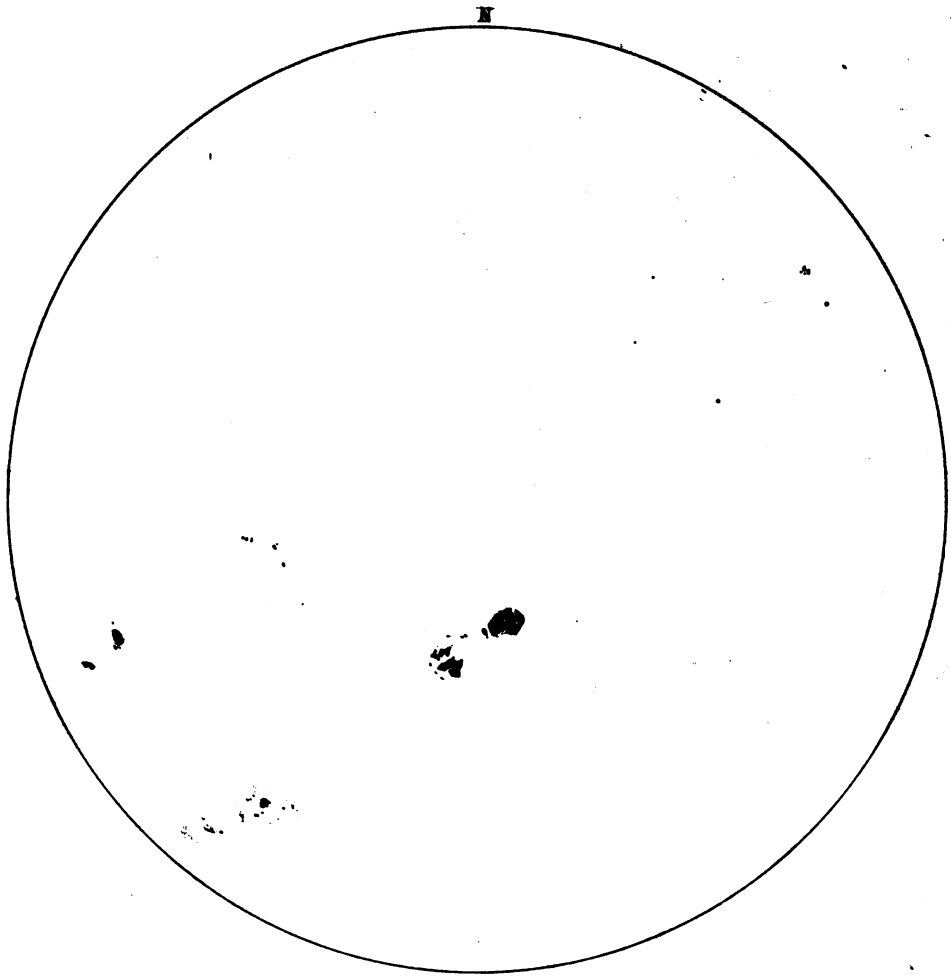
Plate XXVII



Oct. 15th

Sestini's Sun Spots

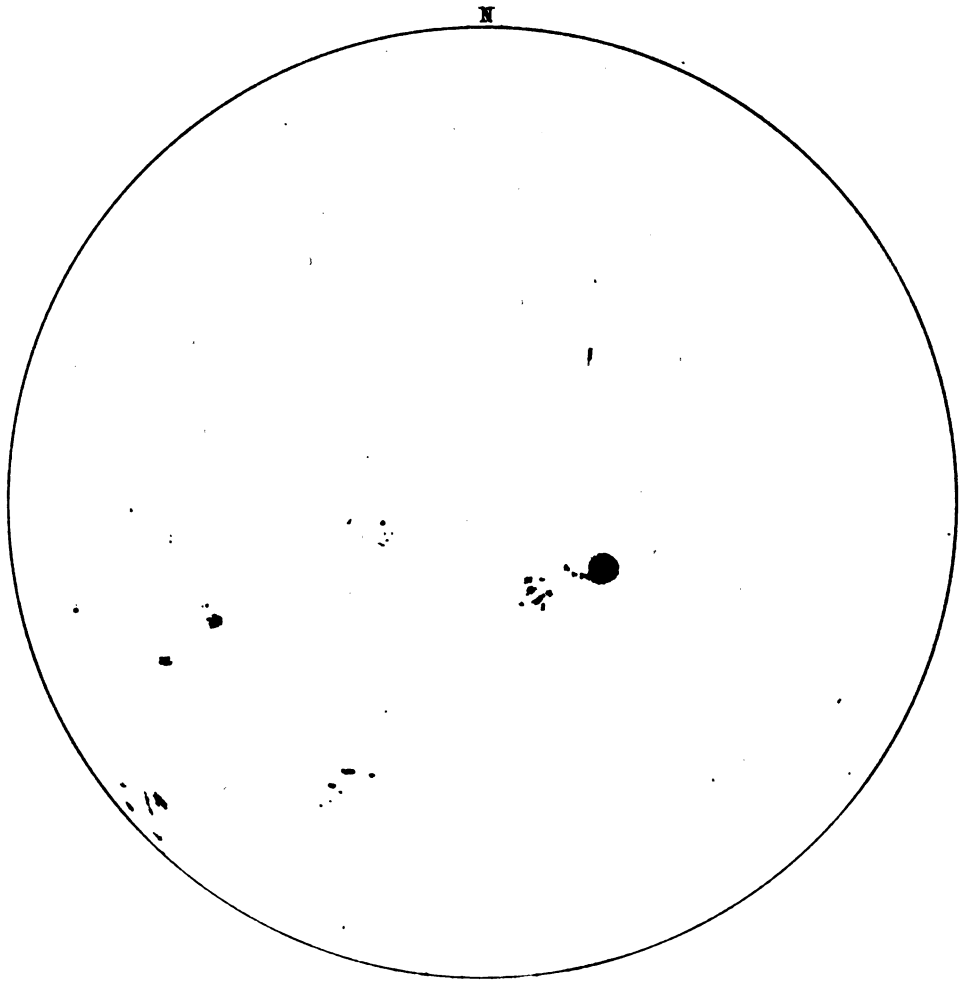
Plate XXVIII



Oct. 16th

Sestini's Sun Spots

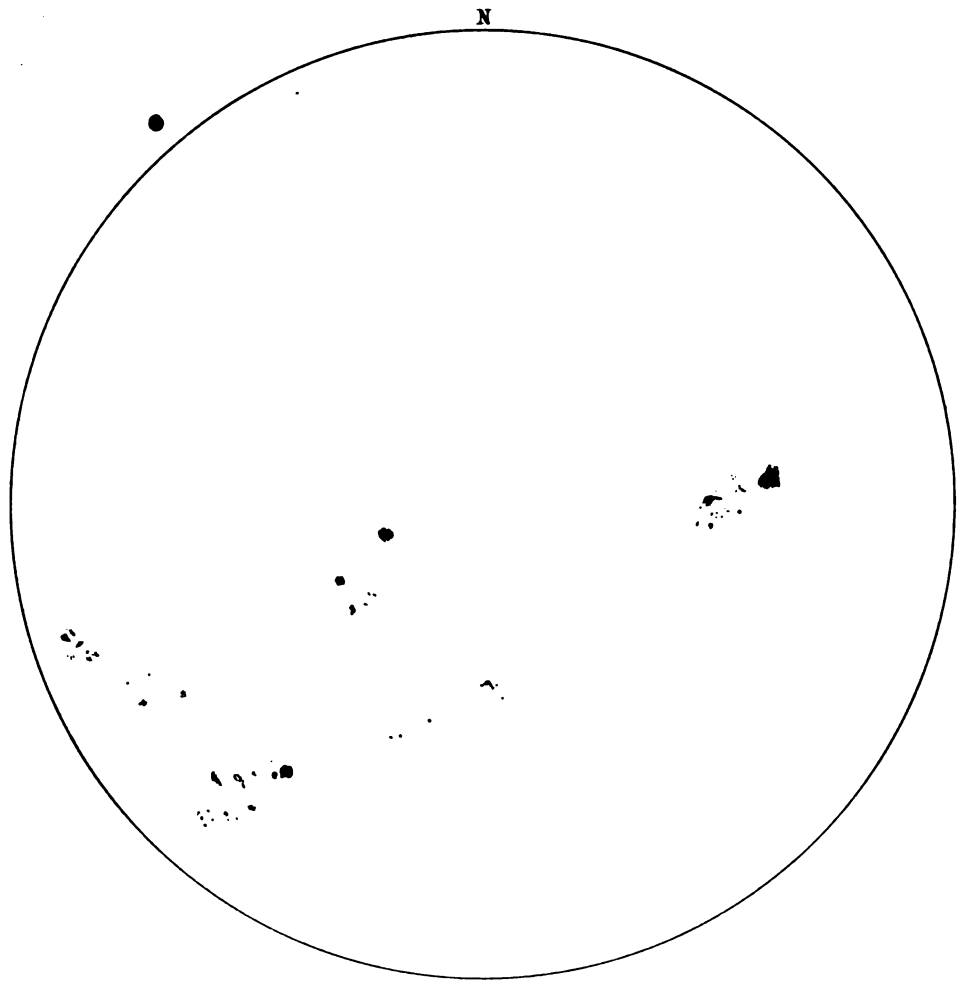
Plate XXIX



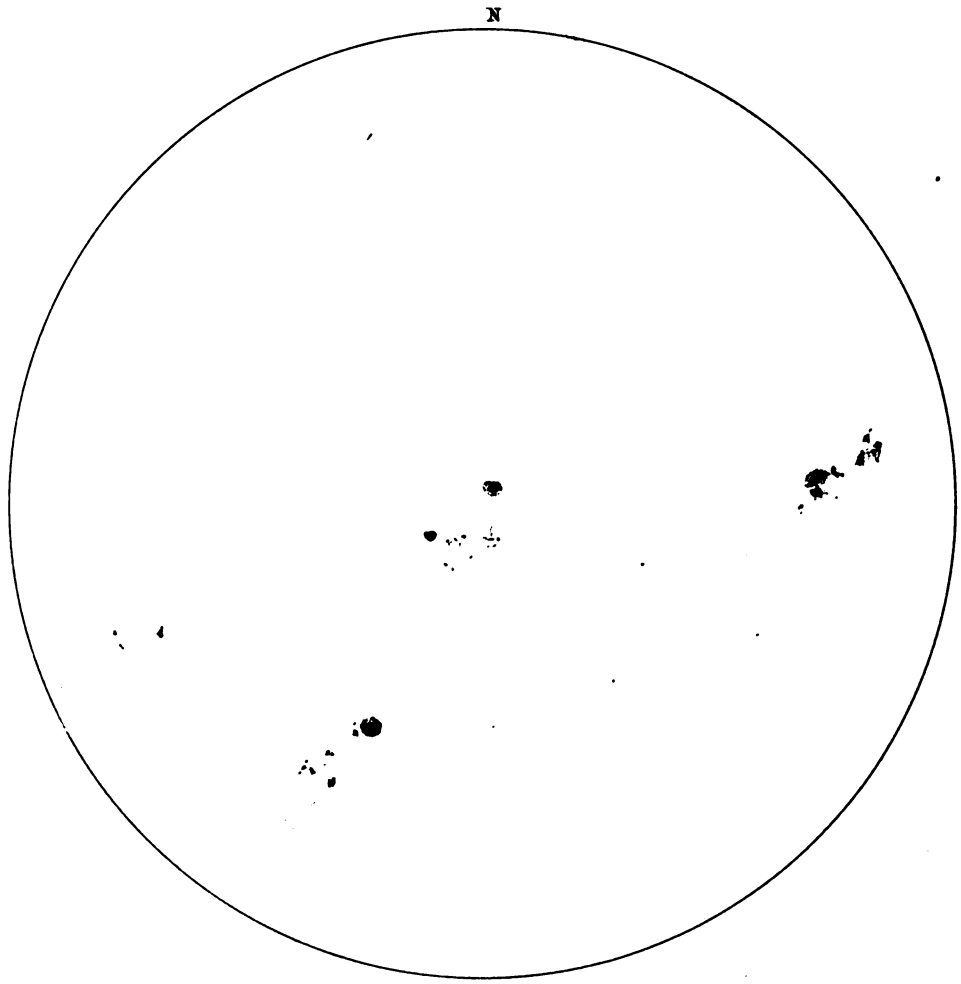
Oct. 17th

Sestini's Sun Spots

Plate XXX



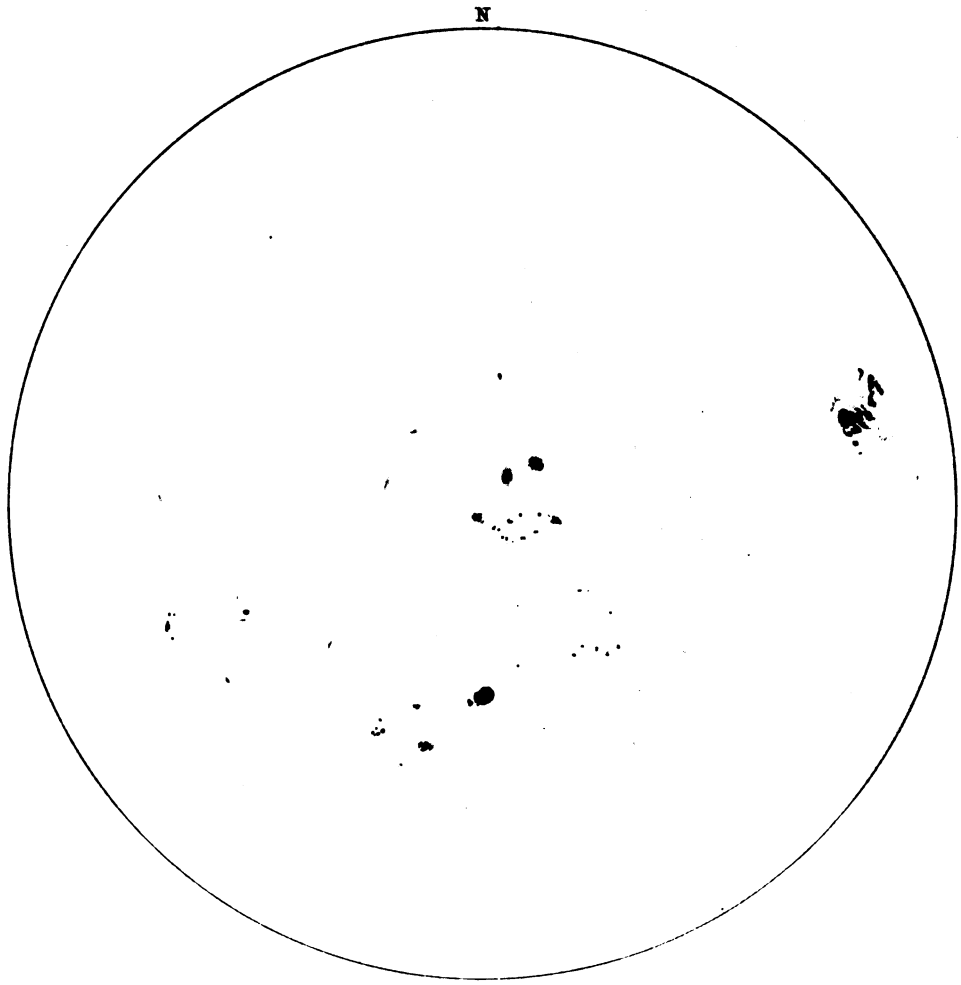
Oct. 19th



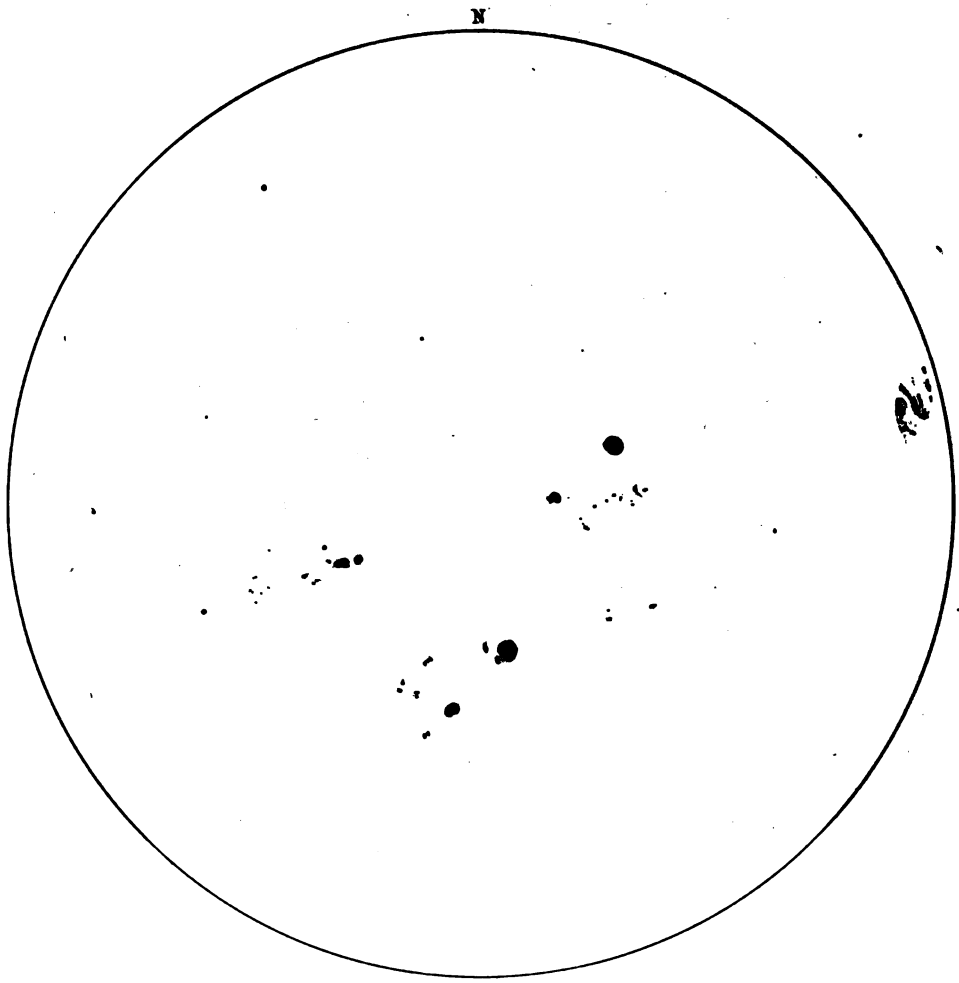
Oct. 20th

Sestini's Sun Spots

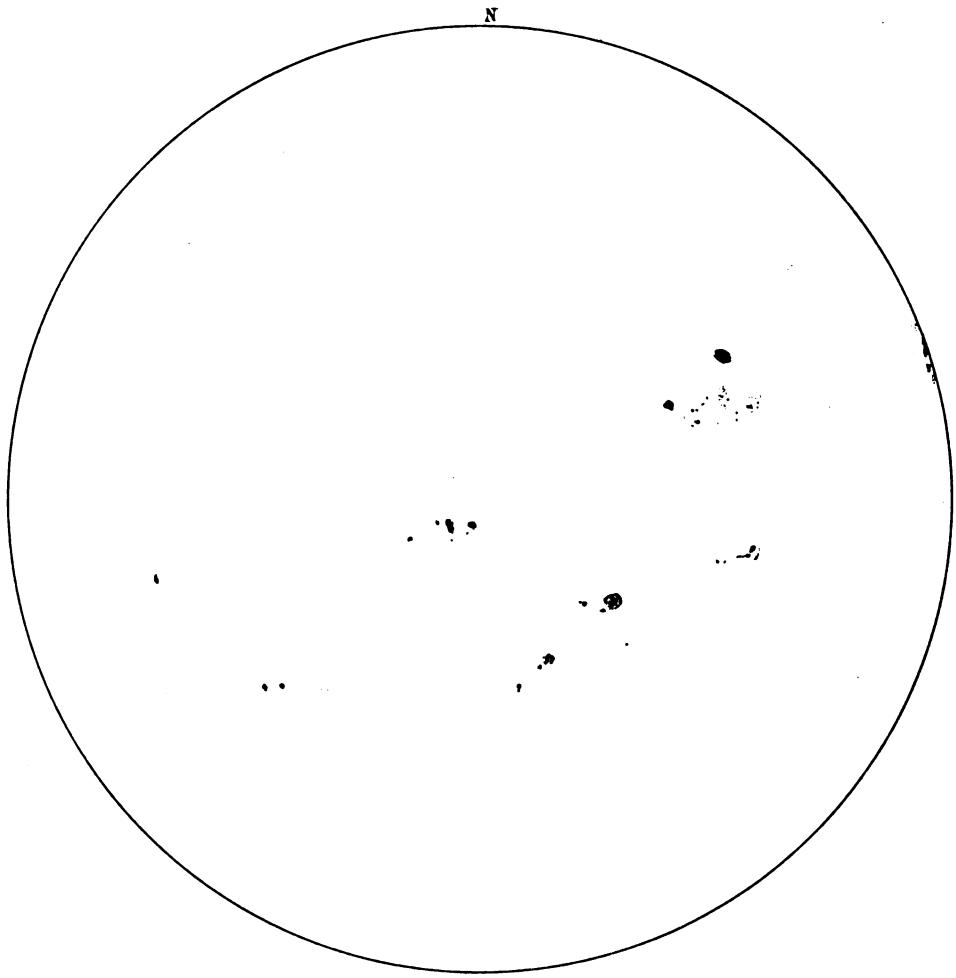
Plate XXXII



Oct. 21st



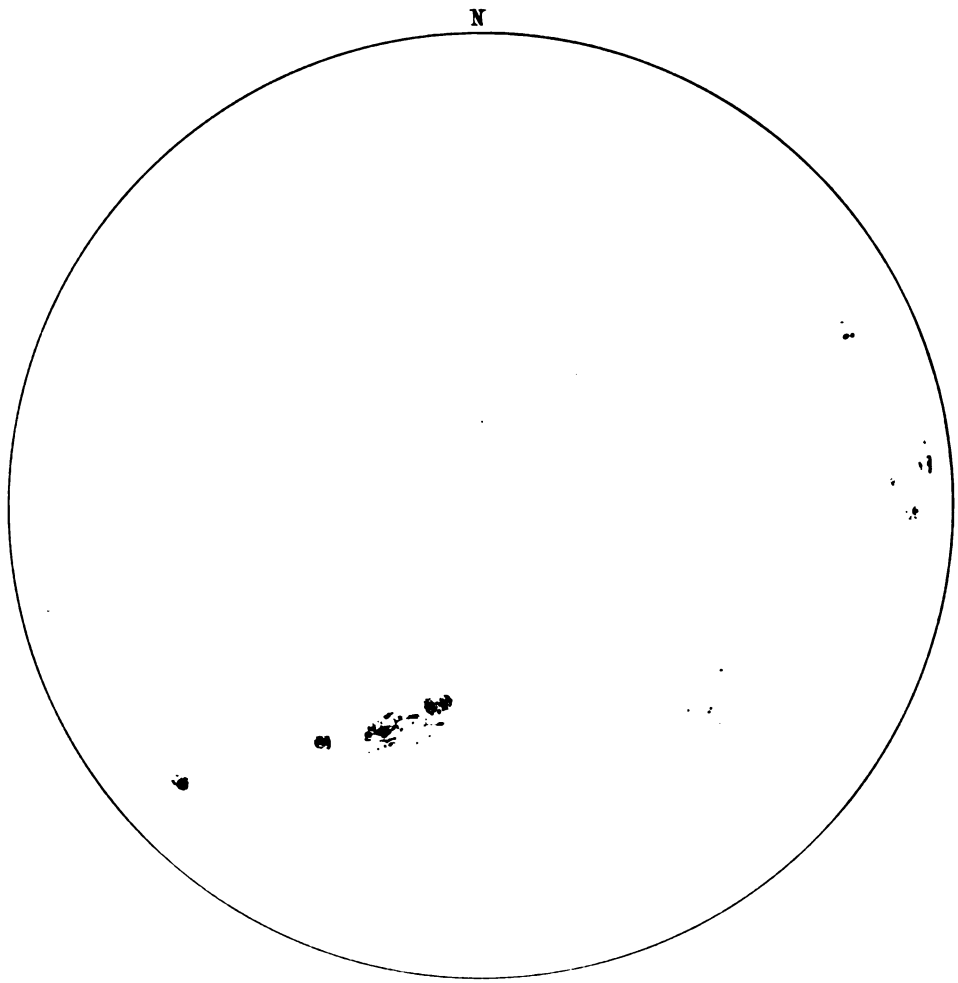
Oct. 22nd



Oct. 23d

Sestini's Sun Spots

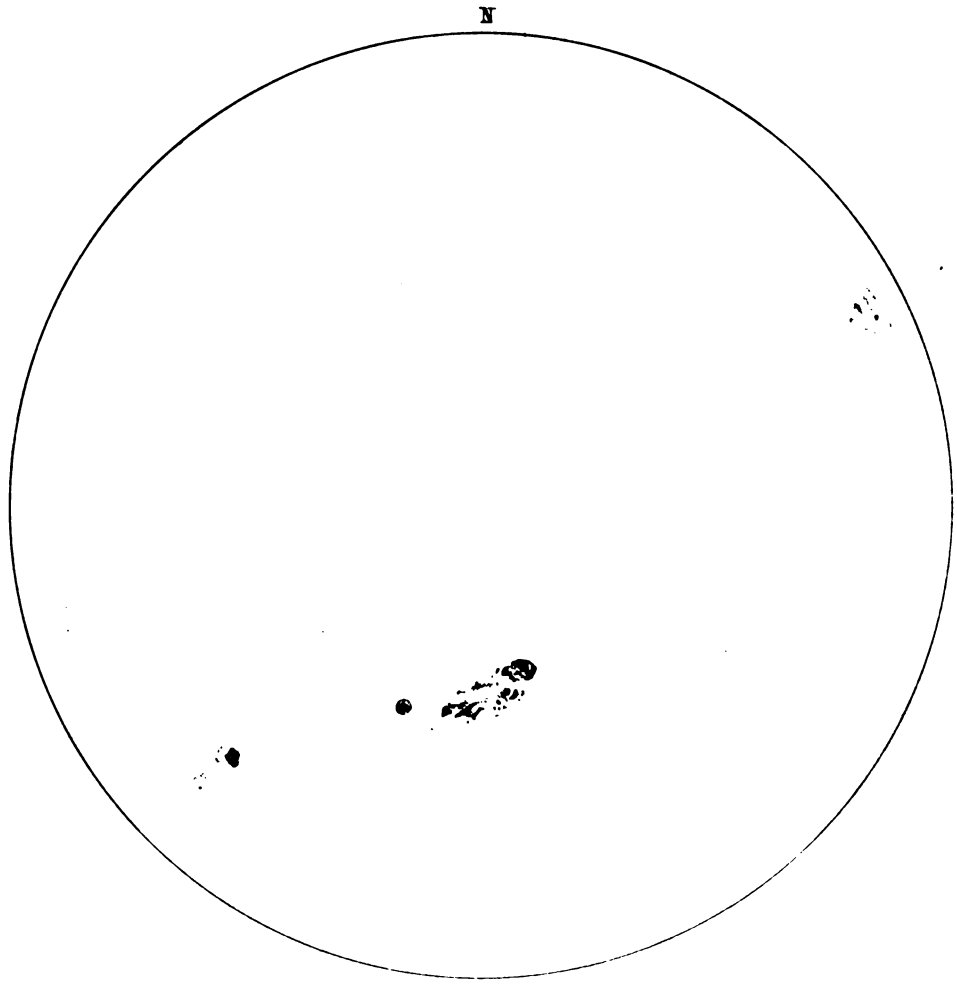
Plate XXXV



Oct. 28th

Sestini's Sun Spots

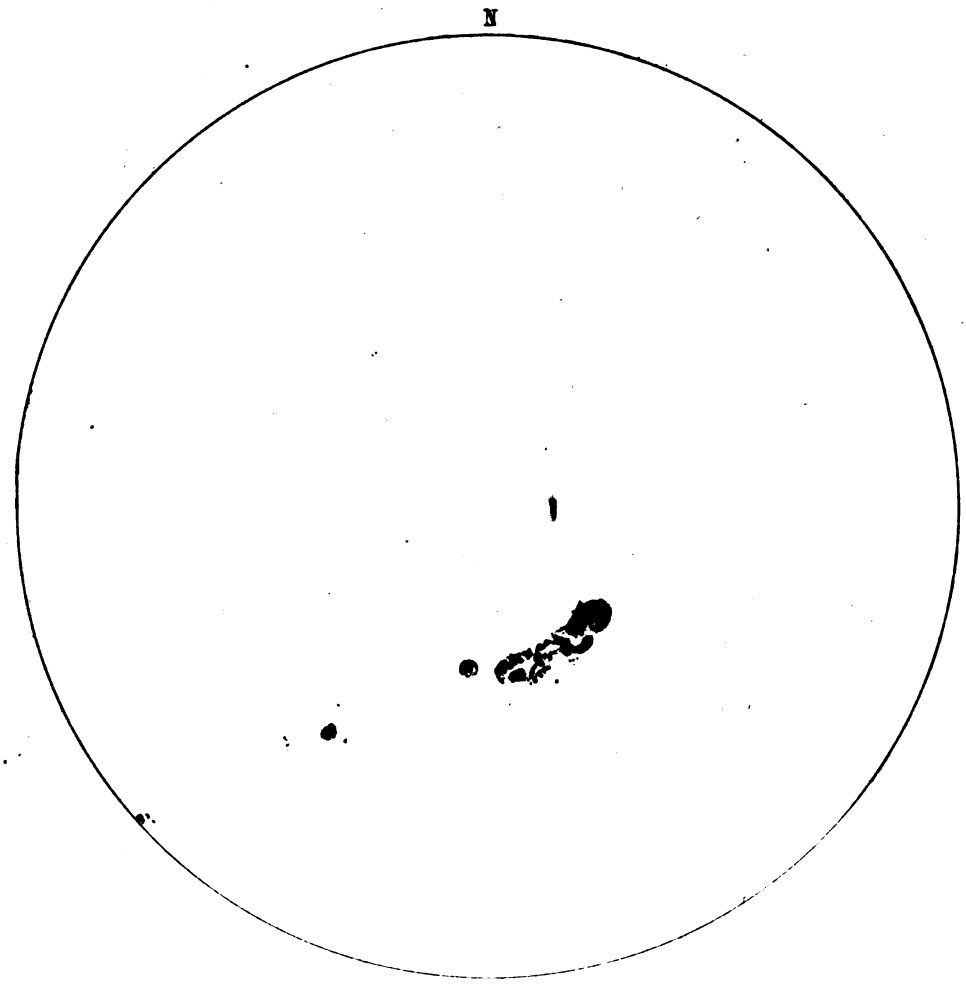
Plate XXXVI



Oct. 29th

Sestini's Sun Spots

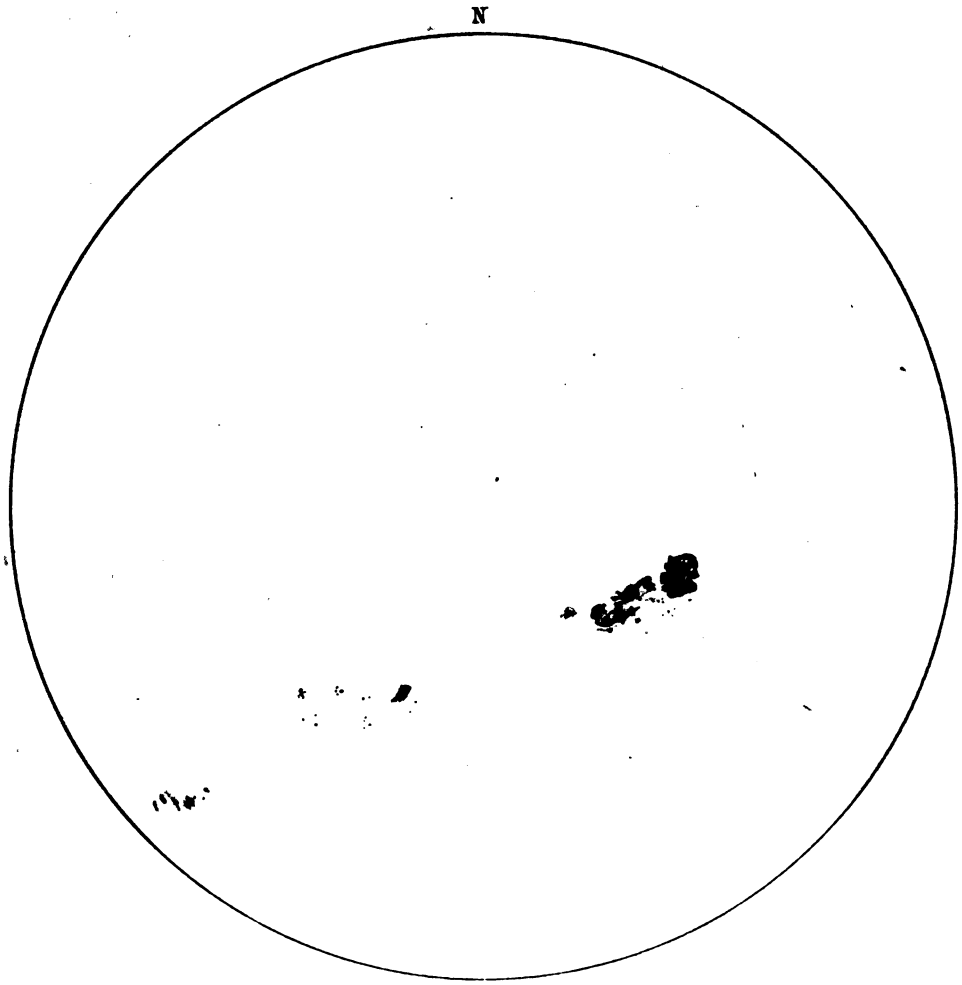
Plate XXXVII



Oct. 30th

Sestini's Sun Spots

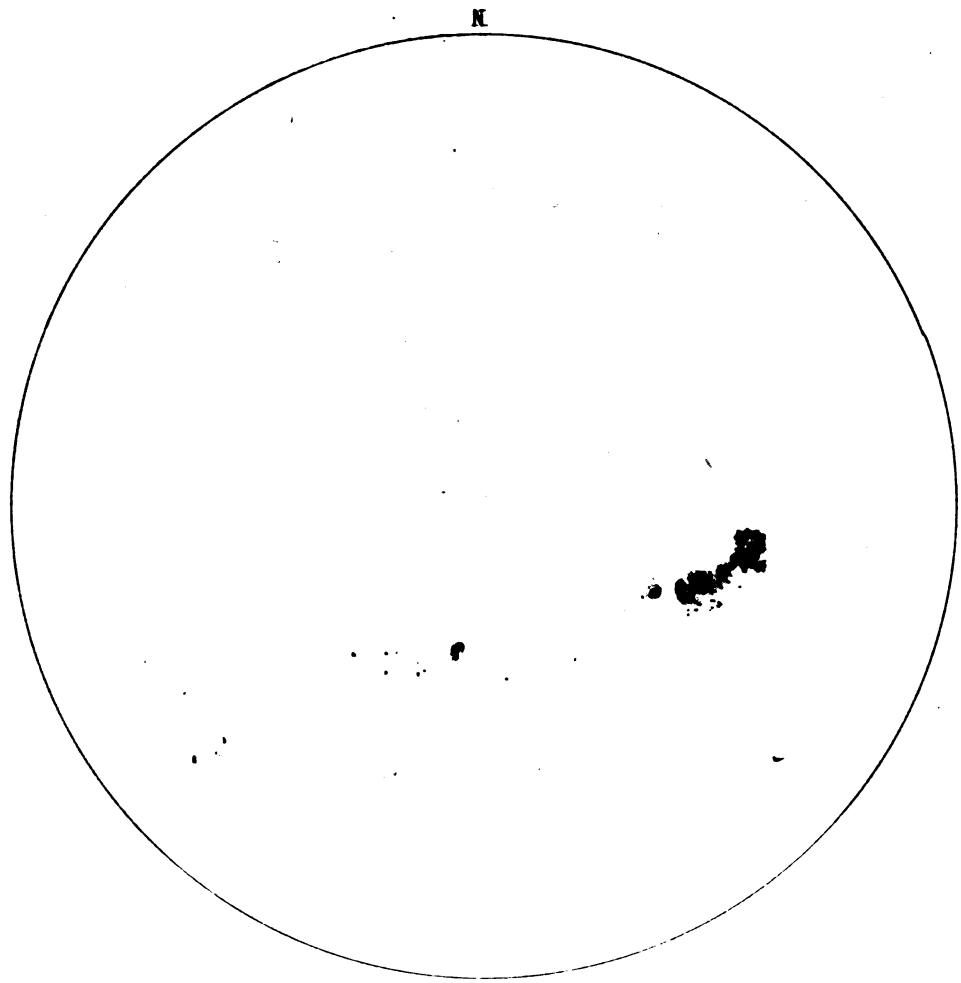
Plate XXXVIII.



Oct. 31st

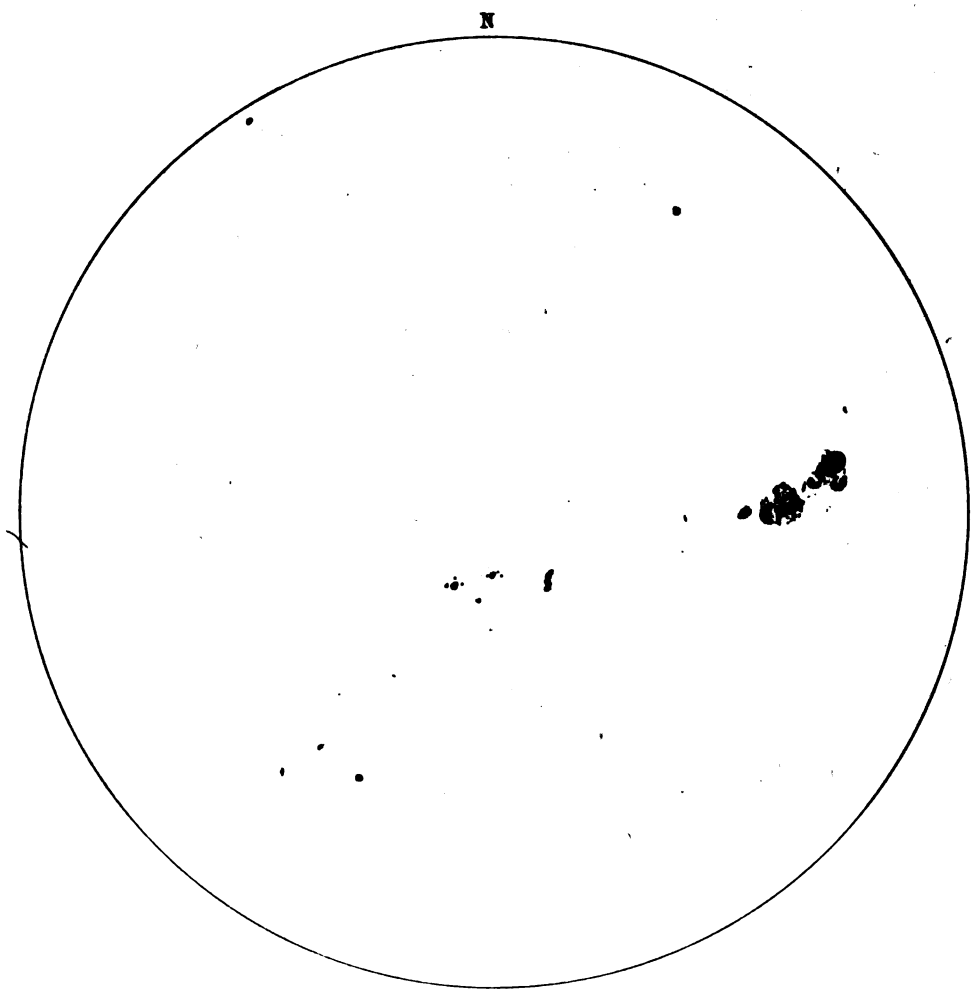
Sestini's Sun Spots

Plate XXXIX



Nov. 1st

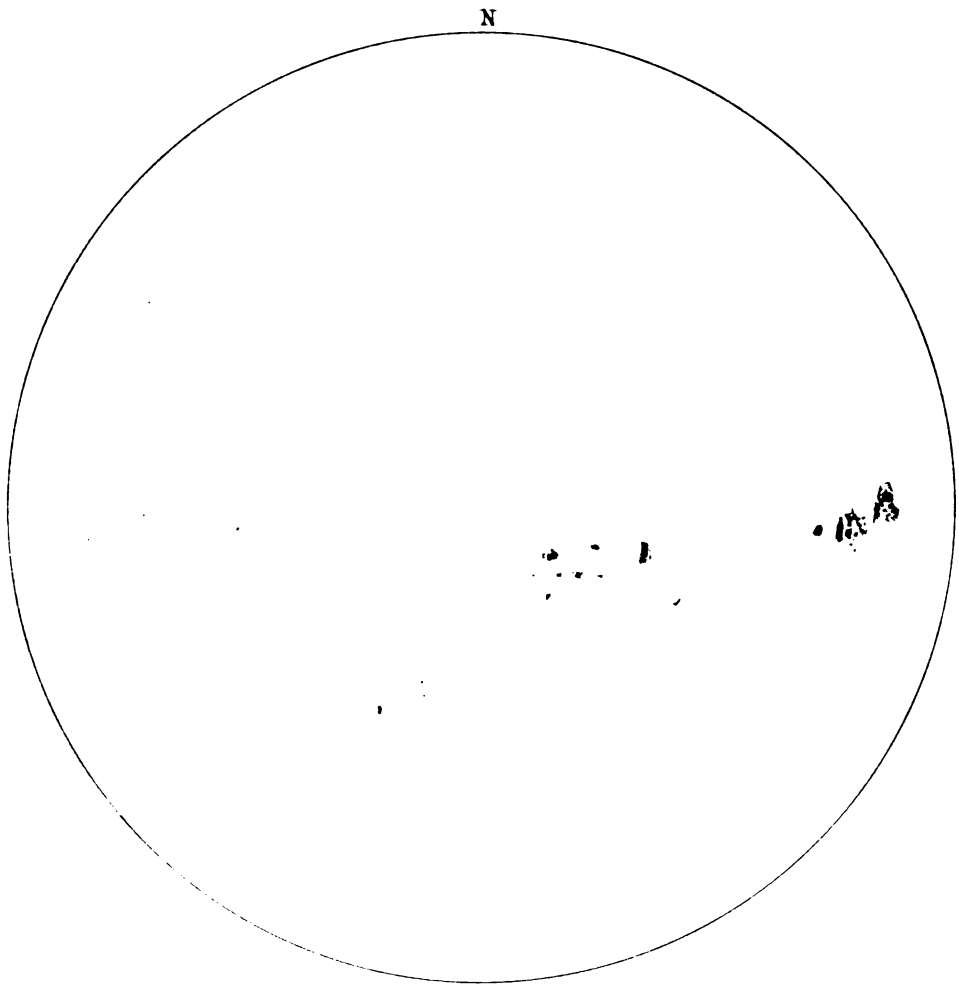
Sestini's Sun Spots **Plate XL**



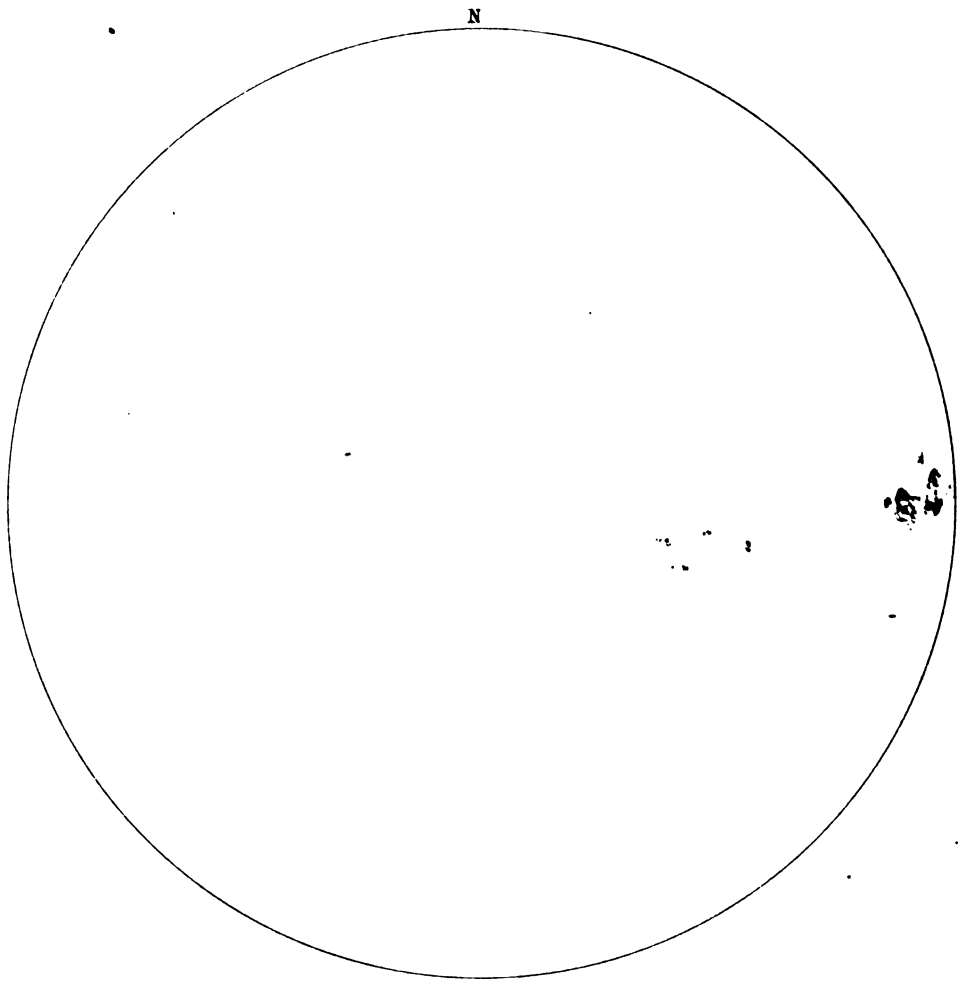
Nov. 2d

Sestini's Sun Spots

Plate XLI



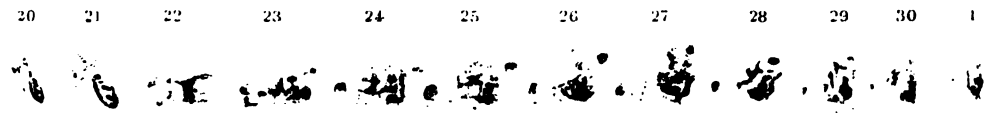
Nov 3d



Nov. 4th

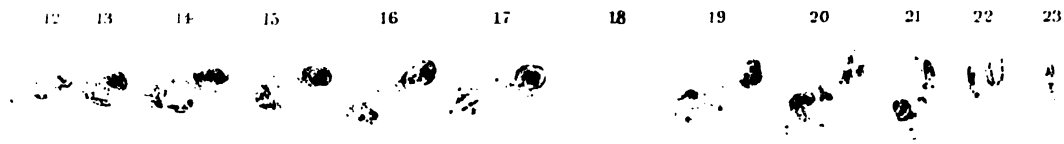
Series of the changes of a cluster

from the 20th of Sept. to the 1st of October



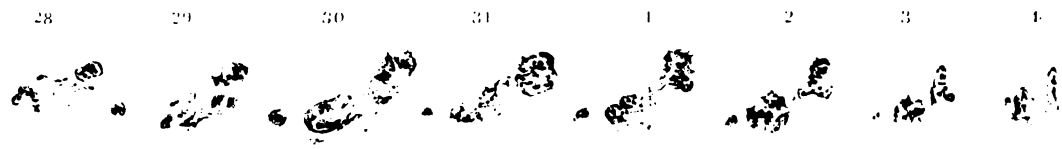
Series of the changes of another cluster

from the 11th to the 23d of October



Series of the changes of a third cluster

from the 28th of October to the 4th of November



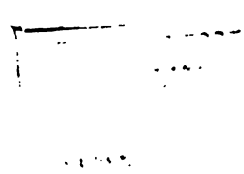
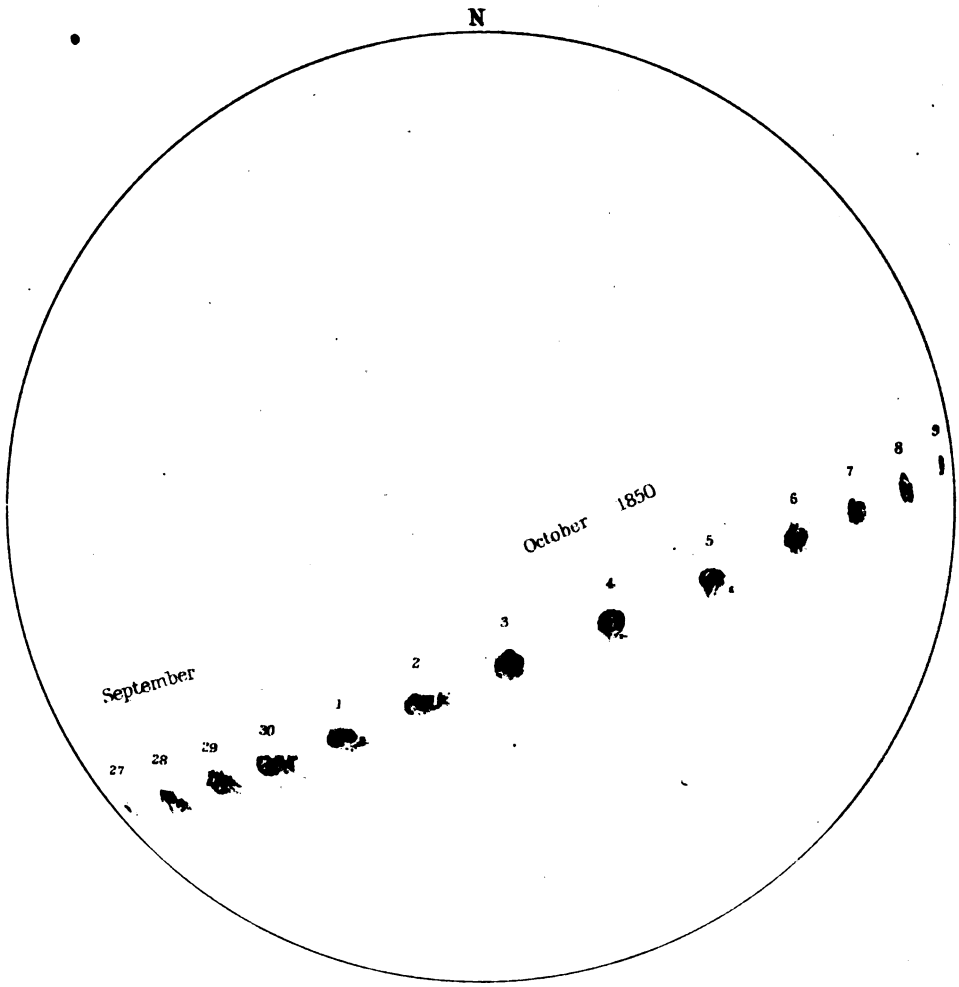
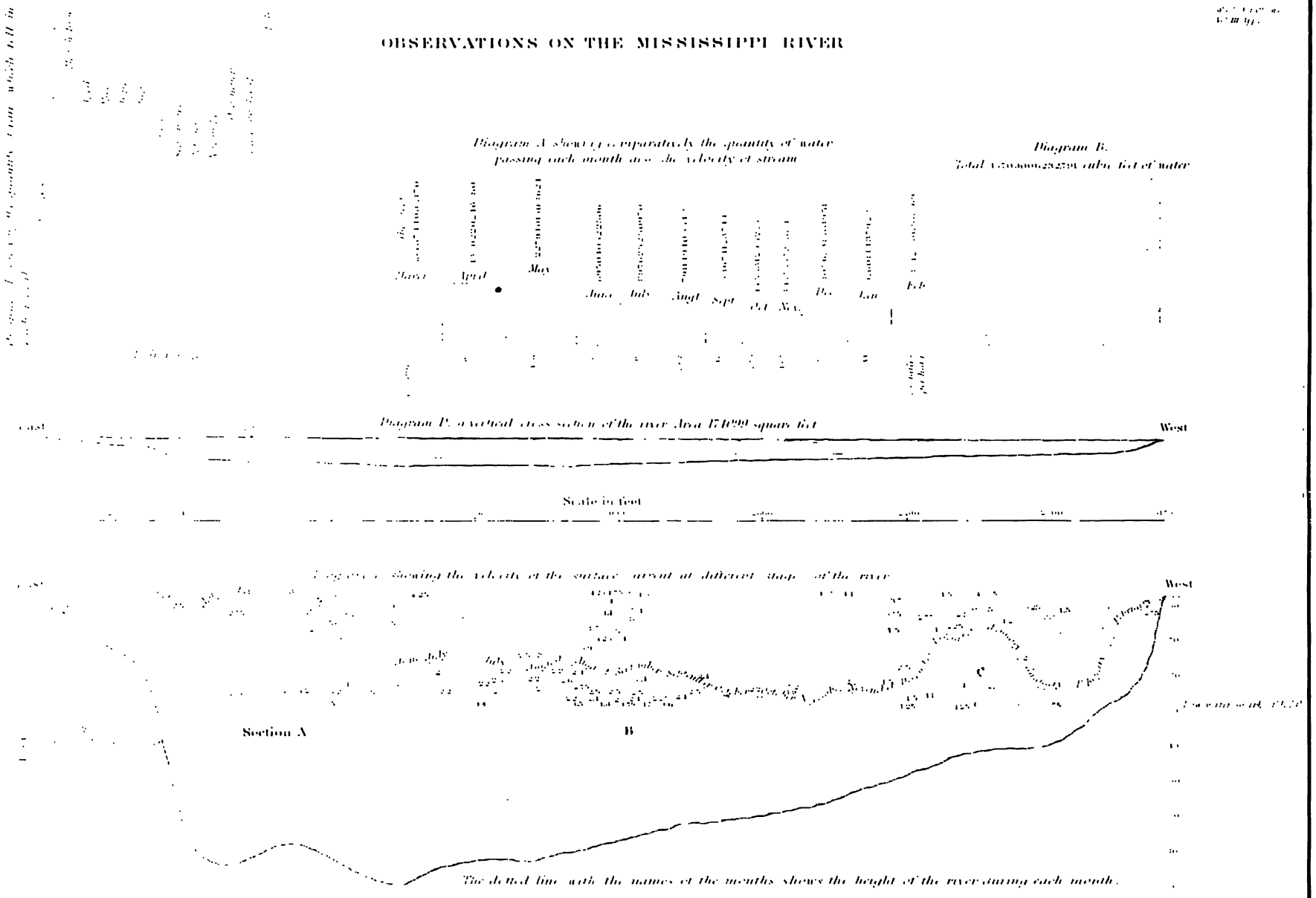
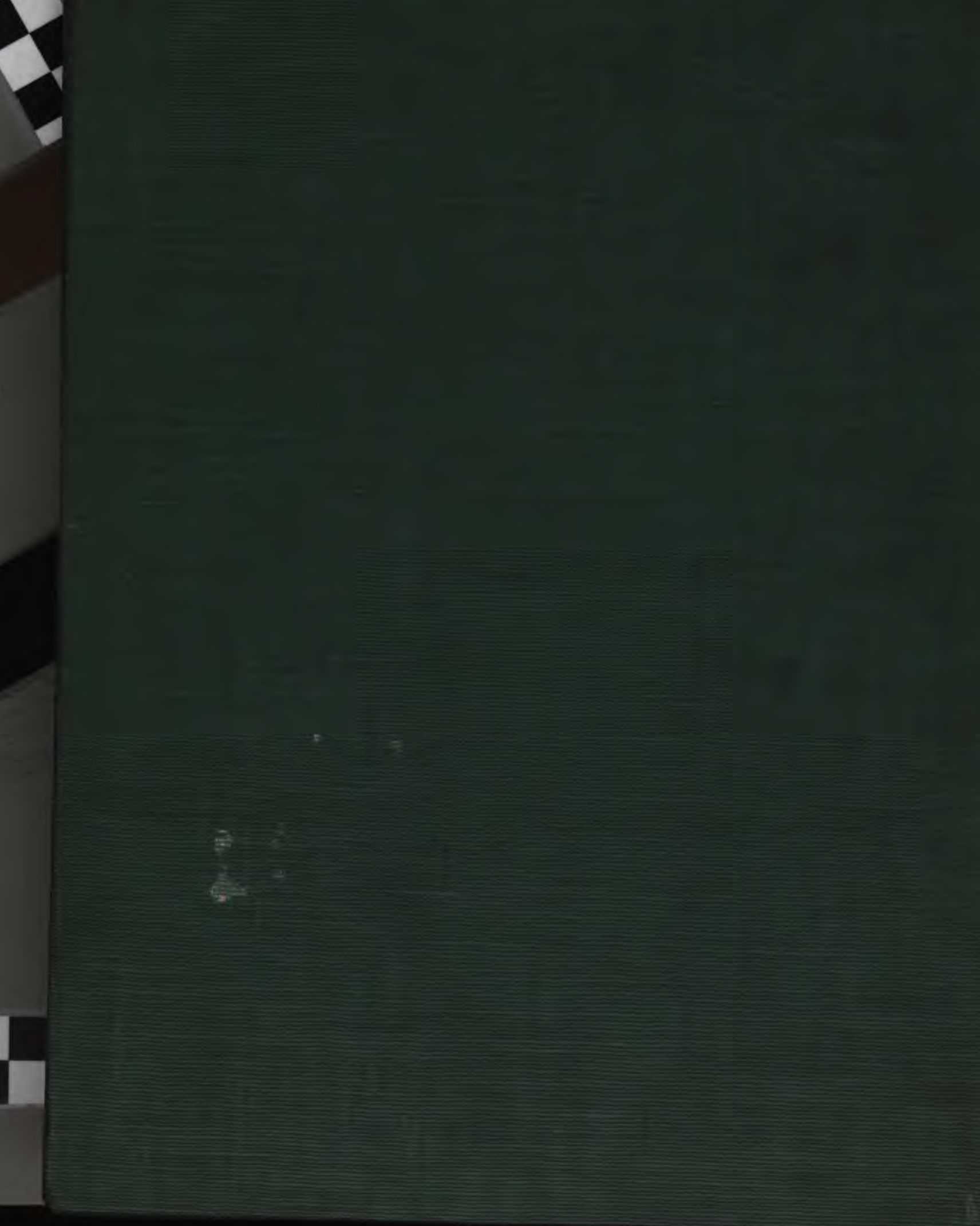


Diagram showing the track of a spot on the solar disk. **Plate XLIV**



OBSERVATIONS ON THE MISSISSIPPI RIVER



FEB 6 - 1939